

# Math Talent Quest

**1<sup>st</sup> Annual Math Talent Quest  
April 17<sup>th</sup>, 2012**

**Proctor's Handbook**

**Please read this handbook carefully before the administration of the test.**

**2012 Math Talent Quest**

Dear Proctors,

It is my pleasure to announce that we are holding the 1st Annual Math Talent Quest this year on April 17, 2012. I greatly appreciate your commitment in the development of young students' interest in mathematics. Our aim is to promote enthusiastic exploration of mathematics among young mathletes and to develop problem solving skills that will support broad-based learning in mathematics and science. The contest is designed to be both challenging and engaging and it will be a great experience for the aspiring young talents.

Math Talent Quest is both similar to and different from other math competitions. We aim for MTQ to be accessible to a diverse and disperse population of young students; to be procedurally simple and to exploit electronic technologies to lower or eliminate common costs and lower barriers to entry; to provide a stratified experience that is accessible to a spread of ages and abilities, that motivates students to attempt greater challenges, and serves a screening purpose leading to a national math team for young students. While a lot of effort has gone into creating an event that embraces all these goals, this is the inaugural roll-out of this event and doubtless will reveal weaknesses that should receive attention going forward. We will be glad to hear your comments on any aspect of your experience officiating MTQ.

This handbook is provided to present information you need or may wish to have in an organized and clear way. We have tried to anticipate many of the possible questions you may have, but surely there is room for improvement. We would welcome any specific notes that will help us improve future editions.

Sincerely,

Yuxuan Qi  
Director, Math Talent Quest

# Sponsorship

All 2011-2012 Math Talent Quest sponsorship comes  
from *Beijing STFX Education*



# Table of Contents

<b>I.</b>	<b>Registration</b> .....	<b>5</b>
<b>II.</b>	<b>Pre-test Matters</b> .....	<b>5</b>
<b>III.</b>	<b>Eligibility</b> .....	<b>5</b>
<b>IV.</b>	<b>Test Format</b> .....	<b>6</b>
<b>V.</b>	<b>Contest Day Procedure</b> .....	<b>6</b>
<b>VI.</b>	<b>Results</b> .....	<b>8</b>
<b>VII.</b>	<b>Awards</b> .....	<b>8</b>
<b>VIII.</b>	<b>MTQ Online Training Program</b> .....	<b>8</b>
	Information .....	8
	Selection of the Program Participants .....	8
<b>IX.</b>	<b>US Team</b> .....	<b>9</b>
	Selection of the US team .....	9
	Hua Luo Geng Golden Cup Youth Invitational Math Competition .....	9
<b>X.</b>	<b>2012 Math Talent Quest Timetable</b> .....	<b>10</b>
	<b>Attached:</b>	
<b>XI.</b>	<b>Student Answer Sheet</b> .....	<b>11</b>
<b>XII.</b>	<b>Student Answer Reporting Form</b> .....	<b>12</b>

## **I. Registration**

1. Proctors register online through the “Proctors Registration” page under “Registration” on the side bar of our official website, [www.mathtalentquest.org](http://www.mathtalentquest.org)

2. Students who wish to compete unofficially may register under “Student Registration” page under “Registration” on the side bar of our official website. We provide this option to maximize access for all students, but we encourage students to connect with a local proctor and participate officially. Where it is possible for us to do so, we are happy to help students find proctors in their local areas.

3. Students who wish to compete officially do not need to register with Math Talent Quest directly; instead, they should sign up with their proctors. All students who take the test on the testing date with a registered proctor are considered official competitors.

4. There is no need for proctors to register their students before the students take the test. Proctors only need to enter their students’ answers along with their names into the Student Answer Reporting Form after their students take the test. Then, proctors submit the form to Math Talent Quest.

## **II. Pre-test Matters**

1. Exam security is an important matter for which we depend on proctors’ adherence to common sense guidelines and students’ compliance with a simple honor code for just a few days. While we anticipate full cooperation, in fairness to all we must be prepared to disqualify individual students or proctors involved in breaching exam security. Please be sure that you, any assistants, and all students in your group respect this concern.

2. Inform students that they need to bring pens or pencils, basic geometry tools, and scratch paper (graph paper is permitted) on the test day. Please also inform them that they may not use a calculator or any electronic devices at any time during the test.

3. Advise students that practice problems can be found online on our website [www.mathtalentquest.org](http://www.mathtalentquest.org) We encourage you to review those problems with the students.

4. Provide guidance to students regarding the format and difficulty of the contest. Particularly, help students understand that it has a tiered structure spanning a significant range of difficulty and that in percentage terms scores are expected to be significantly lower than is typical of school tests.

5. Inform students that the awards system is stratified by grade level so that they will not be competing for awards against students in other grades. (However, admission to the training program and selection for the US team does involve cross grade level competition as detailed in Section XIII and IX below.)

6. Arrange for a room that will provide fair testing conditions on the contest day.

7. Inform students about the date, location, and time of the contest well before the date of the test.

## **III. Eligibility**

1. Students not yet enrolled in high school AND below the age of 15.5 on the day of the competition are eligible to participate. Home schooled students only need to meet the second criterion.

2. Students do not have to meet any citizenship or related requirements to participate in the April 17 competition.

#### **IV. Test Format**

1. No calculators are allowed.
2. Time limit: 60 minutes.
3. Total number of problems: 24
4. Problems are divided into 3 difficulty levels: general (1-8), intermediate (9-16), and championship (17-24).
5. Scoring: 10 points for each correct answer for problems 1-8; 20 points for each correct answer for problems 9-16, and 30 points for each correct answer for problems 17-24. The highest possible score is 480. Note that half of the possible point total is allocated to the most difficult tier of problems.
6. Problems 1-8 are multiple choice problems; the answer form is a single letter.
7. Problems 9-24 are short answer problems; the answer form is an integer ranging from 000 to 999.
8. No work is required to be shown for any problem on the test. Students only need to write down their final answers (letters for the multiple choice problems, numbers for the short answer problems).
9. International students may use a general English or dual-language dictionary, but it must be reviewed and approved by proctors before the test. The dictionary can not contain any math-related formulas, expressions or specialized terminology (basic terms like circle and triangle are fine).

10. The only tools permitted for use during the test are pencils or pens, erasers, compasses, rulers, protractors, and graph paper. No electronic devices can be used. No reference sheets or equation sheets can be used.

11. Proctors should be adults (possibly volunteers) drawn from schools, homeschools, independent learning centers, or math circles; no proctor should officiate the exam for his or her own child.

#### **V. Contest Day Procedure**

1. On the day before the competition, all registered proctors will receive an email with three documents attached: i) Student Answer Sheet, ii) Student Answer Reporting Form, and iii) the Test. Please be sure that “mathtalentquest.org” is a safe sender for the email address you provided through proctor registration.
2. Print sufficient copies of the Student Answer Sheet before students take the test. Each student should receive one Student Answer Sheet. A sample Student Answer Sheet is on page 10.
3. The Student Answer Reporting Form is a fill-in PDF form into which proctors will enter students’ answers. A sample Student Answer Reporting Form with instructions is on page 11.
4. Print sufficient copies of the exam, but do not show or distribute the test to anyone until the scheduled time of the contest. You may then only give the tests to students who are taking the contest with you.
5. A student may only receive 60 minutes between the time the student sees the problems and the time he or she submits the Student Answer Sheet to you.

5. Read aloud the following directions before starting the exam:

i. Put your name on the top left corner of the Student Answer Sheet where it says “Student Name.”

ii. Put your grade on the line under your name where it says “grade.”

iii. You have 60 minutes to complete the test.

iv. The first 8 problems are multiple choice, and the last 16 problems are short answers. There is only one correct answer for each problem. The answer for each multiple choice problem is a single letter and the answer for each short answer problem is an integer ranging from 000 to 999.

v. There is no penalty for wrong answers and there is no reward for blank answers. Each of the first problems 1-8 is worth 10 points. Each of the problems 9-16 is worth 20 points, and each of the problems 17-24 is worth 30 points.

vi. You may only use scratch paper, pencil or pen, ruler, compass, protractor, and graph paper during this contest. No other aids can be used during the test.

vii. Once the test begins, you are not allowed to ask any questions regarding the content of the test; this includes questions relating to the interpretation of directions or the meanings of words. If you have any questions, please ask them now.

4. Give students verbal reminders of time remaining at 30 minutes and 5 minutes remaining. Displaying start and end times prominently may be helpful to students.

5. When 60 minutes is up, tell all students to put their pencil and paper down.

6. No change on the Student Answer Sheets may be made after the time is called.

7. Before collecting the Student Answer Sheets, instruct students to read the honor code statement at the bottom of the sheet and sign; the student’s signature and compliance with the honor code is a condition for receiving a score.

8. Emphasize to students that they may NOT discuss any aspect of the test, including the difficulty and the content, once they leave the exam room until April 20<sup>th</sup>. If you choose to do so, you may permit participants to discuss the problems among themselves before leaving the exam room.

9. Collect your students’ Student Answer Sheets AND all copies of the exam content and all scratch paper.

10. After you collect your students’ Student Answer Sheets, students’ answers must be entered into Student Answer Reporting Form(s). The answer reporting form is an electronic fill-in document that is computer-read, so accuracy is important. We recommend that proctors collaborate in this step with an assistant who will proofread for transcription errors.

11. Email the Student Answer Reporting Form(s) to [studentanswer@mathtalentquest.org](mailto:studentanswer@mathtalentquest.org) as soon as possible after proofreading. You must submit all student answers by midnight of April 19<sup>th</sup> (Eastern Daylight Time).

12. Maintain security over exam materials until April 20<sup>th</sup>.

13. You may return the exam copies students on or after April 20<sup>th</sup> if you choose to do so, but please keep the original Student Answer Sheets secure until you receive your score report; this

is to provide sure means to investigate any irregularities or apparent processing errors.

## **VI. Results**

1. Answers will be posted online on April 20, 2012.
2. Each proctor will receive an electronic report of results including summary statistics of all test takers one to two weeks after the test.
3. General statistics will be posted on the Math Talent Quest website during the week following April 20, 2012.
4. Students who qualify for the Online Training Program will also be notified one to two weeks after the test.

## **VII. Awards**

1. Certificate of participation may be given to all students who challenge themselves by taking the Math Talent Quest.
2. Certificate of Honor is given to outstanding students in their respective testing sites. This local award is not specifically quantified so that proctors may have some flexibility to tailor awards to circumstances that may vary by location.
3. Certificates of 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place are given to the top three students in each test center. These local awards may be used in addition to or instead of the Certificate of Honor as suits local circumstances.
4. All certificates will be available electronically on April 17<sup>th</sup>.
5. The top students in the nation will be announced on the website one to two weeks after the contest takes place.

6. Around 30 of these top students will be invited to join an Online Math Training Program organized by Math Talent Quest.

## **VIII. MTQ Online Training Program**

### **A. Information**

1. Approximately 30 of the top participants will be chosen to participate in the Math Talent Quest Online Math Training Program.
2. The program will train students in problem solving skills at an Olympiad level. A number of Olympiad-styled practice activities will be given to participants of the program; these will serve both training purposes and evaluation purposes. Participants will receive personal feedback for each practice Olympiad.
3. A core purpose of the MTQ Online Training Program is to train potential US team members for the Hua Cup Contest and to select the traveling team members.
4. A schedule for the training program will be posted as soon as the invitees are announced.
5. A portion of handouts given out to the participants of the Online Math Program will be available online to everyone.

### **B. Selection of the Program Participants.**

1. All participants must be US citizens or legal residents who are green card holders.
2. A minimum of ten 1<sup>st</sup> – 6<sup>th</sup> graders will be chosen to join the Training Program.
3. A minimum of ten 7<sup>th</sup> graders will be chosen to join the Training Program.
4. After these twenty students are selected, we will choose another 10 students nonspecifically in regard to grade level. This group may



include some 8<sup>th</sup> graders who are not eligible for the US Hua Cup team.

## **IX. US Team**

### **A. Selection of the US Team.**

1. Only participants of the Math Talent Quest Contest are eligible for the U.S. Team.
2. All U.S. team members must be U.S. citizens or legal residents who are green card holders.
3. A number of Olympiad-styled practice tests will be given to training program participants. The scores of these tests will contribute to a team index for each participant in the program.
4. Two 7<sup>th</sup> graders will be selected for the U.S. team.
5. Two students from grades 1-6 will be selected for the U.S. team.
6. One alternate will be selected from each of the above groups.
7. In making the final selection of the national team, all available information will be considered with appropriate weight and the coaches' decision will be final.

### **B. Hua Luo Geng Golden Cup Youth Invitational Math Competition.**

1. The Hua Luo Geng Golden Cup Youth Invitational Math Competition is an international mathematics contest based in

China with a substantial history dating back to 1986. Since its founding, more than 40 million students have participated, drawn primarily from Asian countries. The present project to develop and send a US team represents the first time the United States will be represented in this event. It is often abbreviated as the “Hua Cup.”

2. The competition includes two individual rounds and one team round in which all four team members work together to solve a packet of problems. The topics covered encompass number theory, algebra, geometry, and combinatorics.
3. All the offshore cost of the traveling team will be covered by Math Talent Quest. This includes: Tran-Pacific airfare, local transportation in China, hotel, registration fees, and local excursions. Travel to a West Coast travel hub is expected to be at student/family expense.
4. The minimum US delegation will consist of the four students and two coaches. The two coaches will be Yuxuan Qi, Director of Math Talent Quest, and David Brown, Advisor to Math Talent Quest and Director of the San Diego Math Circle.
5. It is expected that some parents of team members may wish to accompany the team as chaperones. This is welcome; however, there is no financial support available for this purpose.
6. Passports and appropriate visas will be required for all members of the delegation.

## X. 2012 Math Talent Quest Timetable

- April 13      Registration deadline
- April 16      Exam materials sent by attachment to proctors' email address as provided at registration
- April 17      Math Talent Quest exam administered by proctors.  
All materials related to the exam are to be retained by proctors and all discussion of exam contents is to be suspended until April 20.
- April 18&19   Proctors complete and email Student Answer Reporting Form(s) as attachments to [studentanswer@mathtalentquest.org](mailto:studentanswer@mathtalentquest.org) . The deadline for this submission is midnight, April 19, Eastern Daylight Time.
- April 20      Exam answers will be posted on the Math Talent Quest website.  
Exam materials may be returned to students if desired and exam content may be discussed freely by anyone.
- April 20+     In the following one to two weeks, score reports will be sent to proctors, statistics will be published, top scoring students will be posted, and the invitees to the Math Talent Quest Online Training Program will be announced.
- May- June    Math Talent Quest Online Training Program. Specific dates will be announced later.
- Late May     US Team Announced.
- August 14-18   Hua Luo Geng Golden Cup Youth Invitational Math Competition in Macau.

## Math Talent Quest Student Answer Sheet

**Student Name:** \_\_\_\_\_ **Grade:** \_\_\_\_\_ **Age:** \_\_\_\_\_ **Gender (circle one):** **M** **F**

Instructions: For problems 1-8, enter the letter corresponding to your answer choice. For problems 9-24, enter a 3-digit integer as the result of your calculation; for clarity, include leading zeros in your answers if they would otherwise have less than 3 digits (e.g., write 017 instead of 17).

Problem 1 _____	Problem 9 _____	Problem 17 _____
Problem 2 _____	Problem 10 _____	Problem 18 _____
Problem 3 _____	Problem 11 _____	Problem 19 _____
Problem 4 _____	Problem 12 _____	Problem 20 _____
Problem 5 _____	Problem 13 _____	Problem 21 _____
Problem 6 _____	Problem 14 _____	Problem 22 _____
Problem 7 _____	Problem 15 _____	Problem 23 _____
Problem 8 _____	Problem 16 _____	Problem 24 _____

**Honor Code:**

By signing below, I certify that all answers shown on this answer sheet reflect my own work, that I have not cheated or acted in any dishonorable way during this test, and that I will not share with anyone else by personal, electronic, or any other means any information or opinion relating to this test, until April 20th, 2012.

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

## Math Talent Quest Student Answer Sheet

**Student Name:** \_\_\_\_\_ **Grade:** \_\_\_\_\_ **Age:** \_\_\_\_\_ **Gender (circle one):** **M** **F**

Instructions: For problems 1-8, enter the letter corresponding to your answer choice. For problems 9-24, enter a 3-digit integer as the result of your calculation; for clarity, include leading zeros in your answers if they would otherwise have less than 3 digits (e.g., write 017 instead of 17).

Problem 1 _____	Problem 9 _____	Problem 17 _____
Problem 2 _____	Problem 10 _____	Problem 18 _____
Problem 3 _____	Problem 11 _____	Problem 19 _____
Problem 4 _____	Problem 12 _____	Problem 20 _____
Problem 5 _____	Problem 13 _____	Problem 21 _____
Problem 6 _____	Problem 14 _____	Problem 22 _____
Problem 7 _____	Problem 15 _____	Problem 23 _____
Problem 8 _____	Problem 16 _____	Problem 24 _____

**Honor Code:**

By signing below, I certify that all answers shown on this answer sheet reflect my own work, that I have not cheated or acted in any dishonorable way during this test, and that I will not share with anyone else by personal, electronic, or any other means any information or opinion relating to this test, until April 20th, 2012.

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

## 2012 Math Talent Quest Student Answer Reporting Form

**Instructions:** Please complete this form as indicated, then save as a PDF document with the title “2012 MTQ Answer Reporting Form N,” where an index number N may be used if more than one form is submitted. Then, email the saved document(s) to [studentanswer@mathtalentquest.org](mailto:studentanswer@mathtalentquest.org) . This form allows three students’ answers to be entered. You may use as many copies as you need account for all of your students. Proctor information (i.e. Proctor Name, School Name, etc) only needs to be filled in once per proctor. (Please ignore the “submit form” button or similar feature that may appear in the frame of your PDF reader.)

Proctor Name: \_\_\_\_\_

School (Organization) Name: \_\_\_\_\_

School (Organization) Address: \_\_\_\_\_

Zip Code: \_\_\_\_\_ State: \_\_\_\_\_ Country: \_\_\_\_\_

Student Name _____	Student Name _____	Student Name _____
Grade Level _____	Grade Level _____	Grade Level _____
Age _____ Gender M F	Age _____ Gender M F	Age _____ Gender M F
Problem 1 _____	Problem 1 _____	Problem 1 _____
Problem 2 _____	Problem 2 _____	Problem 2 _____
Problem 3 _____	Problem 3 _____	Problem 3 _____
Problem 4 _____	Problem 4 _____	Problem 4 _____
Problem 5 _____	Problem 5 _____	Problem 5 _____
Problem 6 _____	Problem 6 _____	Problem 6 _____
Problem 7 _____	Problem 7 _____	Problem 7 _____
Problem 8 _____	Problem 8 _____	Problem 8 _____
Problem 9 _____	Problem 9 _____	Problem 9 _____
Problem 10 _____	Problem 10 _____	Problem 10 _____
Problem 11 _____	Problem 11 _____	Problem 11 _____
Problem 12 _____	Problem 12 _____	Problem 12 _____
Problem 13 _____	Problem 13 _____	Problem 13 _____
Problem 14 _____	Problem 14 _____	Problem 14 _____
Problem 15 _____	Problem 15 _____	Problem 15 _____
Problem 16 _____	Problem 16 _____	Problem 16 _____
Problem 17 _____	Problem 17 _____	Problem 17 _____
Problem 18 _____	Problem 18 _____	Problem 18 _____
Problem 19 _____	Problem 19 _____	Problem 19 _____
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Problem 21 _____	Problem 21 _____	Problem 21 _____
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Problem 24 _____	Problem 24 _____	Problem 24 _____