



math **grades 6-8**
contest **2019**

at **PRINCETON UNIVERSITY**

Coach Handbook

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About

iLearn Math Contest is an event organized by iLearn Schools and New Jersey Charter School Association. It aims to promote interest and enthusiasm for mathematics among secondary school students. Students are expected to work on challenging and fun mathematics problems along with hands-on tasks during on different rounds of the contest. The organization committee works closely with the advisory board to provide the participants an unforgettable experience. Since its launch in 2010, over 1,000 students participated in the Math Contest. Currently in its ninth year, the contest will be held on November 2, 2019 at Princeton University.

Advisory Board Members

Raif Rustamov (Chair,) PhD, AT&T Labs Research

Reyyan Erguder, iLearn Schools

Harry Lee, New Jersey Charter School Association

Eligibility

Students enrolled in grades 6-8 are eligible to participate in iLearn Math Contest.

Students enrolled on a part-time basis are not eligible. Participation in iLearn Math Contest is limited to three years for each student.

Only one team (of up to four students) per school is eligible to compete. However, schools are encouraged to bring up to four additional students to compete as individual alternates. These students will be eligible for individual rankings and prizes, *only*. Team members will be eligible for both team awards and individual awards. *It is recommended that your strongest four students form your school team.* Teams of fewer than four will be allowed to compete; however, team test score will be computed by dividing the sum of the team members' scores by four. *Consequently, teams of fewer than four students will be at a disadvantage.*

Special Needs

Reasonable accommodations may be made to allow students with special needs to participate. Requests for accommodation of special needs must be directed to the coordinators in writing at least three weeks in advance. This written request should thoroughly explain the student's special need as well as what the desired accommodation would entail. Many accommodations that are employed in a classroom or teaching environment cannot be implemented in the competition setting. The coordinators will review the needs of the student and determine if any accommodations will be made.

Registration and Fees

Registration can be done through the contest website at:

<http://mathcontest.ilearnschools.org/>

The cost is a flat fee of \$150 for each school up to 8 students they register.

Competition Rounds

Round One, The Multiple Choice Challenge (50 minutes) of the contest consists of 25 multiple-choice questions (worth 1 point each) with four choices each. All team members and alternates are expected to complete this round. The designated time for this round allows only the most capable students complete all the problems. On this round, students are not allowed to use calculators.

Round Two, The Team Challenge (60 minutes) of the contest consists of a number of components we call "stations" Each team (up to four students) are expected to complete different tasks at each station. Calculators are not permitted during this year's Team Round.

It is important that the coaches designate one of their team members as "Team Captain" This student has to be an individual that demonstrates leadership skills as well as technology use competency (Some tasks may require teams to use technologies such as iPod®, iPad®, etc., which are provided by the organization)

Round Three, The Great Final (about 60 minutes depending on the contest circumstances) of the contest is a fast-paced, oral competition for the top scoring individuals (based on scores in the written rounds) Each team can send their best-scoring member to "The Great Final"

In this round, individuals compete against each other and the clock to solve problems. Calculators are not permitted. The first question (questions #1-5 are worth 2 points each) is distributed in a secure envelope and students are given 60 seconds to solve the problem. When time is called, the Q1 envelopes are passed to the jury for scoring, Q2 envelopes are distributed, and Q1 is projected for the audience to try. Scores for Q1 are announced and then students go on with Q2. At the end of the first set of five questions, students' total scores are announced. Top five-scored individuals only can continue for the second set of five questions. The second part of the Great Final continues in the similar format, however, students earn 4 points for each correct answer for questions #6-10. In case there is a tie at the end of the Great Final, additional questions are used to determine the top three individuals. The maximum score available on the Great Final is $5 \cdot 2 + 5 \cdot 4 = 30$ (if there is no tie)

Sample Team Stations from Past Years

24®Game Station

Scenario: Each team will be given 24®Game (www.24game.com) cards of varying difficulty levels. The object of the game will be to make the number 24 from the four numbers on a game card, using four basic operations.

Time Allowed: 5 minutes

Rules:

- Each team will get only one game card at a time, but will be able to work together to provide their solution
- Students can add, subtract, multiply and divide (Not all four operations have to be used)
- Students must use all four numbers on the card exactly once.
- All number nines will have a red center, so you can tell a nine from a six.

Scoring: The following formula will be used to calculate the team score for this station:

$$100 - (\text{The number of whole seconds they spent to complete 8 cards}) \times (0.1)$$

(Ex: If Team 1 completes 8 cards in 70 seconds, they will lose 7 points from their total team score and get $100 - 7 = 93$ points)

If the team completes less than 8 cards using 5 minutes (300 seconds), their score will be calculated as follows:

$$10 \times (\text{The number of cards} - 1)$$

(Ex: If a team completes 6 cards within the 5 minutes (300 seconds), they will get $10 \times 5 = 50$ points.)



Students were expected to complete 8 cards within the least amount of time on the 24 Game mobile application using an iPad.

Guesstimating and Estimating Station

Scenario: Students will be expected to use efficient strategies to count the number of objects in a set. Students will observe, estimate, and make inferences.

Time Allowed: 5 minutes

Rules: Task-specific rules will be provided on the contest day.

Scoring: Team scores will depend on the closeness of their estimation to the actual quantities. Task-specific scoring guidelines will be provided on the contest day.



Students were given a cylindrical glass jar full of M&M's. Using only a ruler, they were expected to estimate the number of M&M's in the jar.

Additional Rules

- Pencils and paper will be provided for the participants by competition organizers. However, students may bring their own pencils, pens and erasers if they wish. They may not use their own scratch paper.
- Use of notes or other reference materials (including dictionaries) is not permitted.
- Specific instructions stated in a given problem take precedence over any rule or procedure.
- Communication with coaches is prohibited during rounds but is permitted during breaks.
- Communication between guests and the participants is prohibited during competition rounds.
- Calculators are not permitted anytime during the competition.
- Personal electronics (Ex: Pagers, cell phones, iPods®, iPads®, MP3 players...etc) should not be brought into the competition room, unless assigned by the contest officials to be used at a station.
- Failure to comply could result in dismissal from the competition. Should there be a rule violation or suspicion of irregularities, the coordinators or other competition officials have the obligation and authority to exercise their judgment regarding the situation and take appropriate action, which might include disqualification of the suspected student(s) from the competition.

Scoring Guidelines

Team Rankings

Team rankings will be calculated by taking individual scores of the team members, as well as team scores earned from the stations, into account as follows:

$$\text{Team Score} = 0.4 \times \left(\frac{\text{Total Round-1 Score of the Team Members}}{4^*} \right) + 0.6 \times (\text{Team Round Score})$$

*Even if the team has fewer than four members

Individual Rankings of Alternates

Alternates and the top three individuals (determined by the great final scores) only, will be eligible for individual rankings and prizes. While the team members are taking the team round, alternates will be taking an additional test named "Alternate Challenge" in a separate room to be announced. Individual scores of the alternates will be calculated as follows:

$$\text{Individual Alternate Score} = 0.5 \times (\text{Round-1 Score}(\%)) + 0.5 \times (\text{Alternate Challenge Score}(\%))$$

Qualifying for the Great Final

Top ten teams will be determined first, then the top scoring individual members (one per team) will compete in the Great Final.

During the Great Final, top three individual rankings will be calculated based on the individual's performance on the Great Final only, regardless of the individual score from the previous rounds, unless tiebreakers are needed between two or more individuals.

Ties will be broken as necessary to determine team and individual prizes and to determine which individuals qualify for the Great Final.

Note: These are very general guidelines. Competition officials use more detailed procedures.

Tentative Program of the Contest Day

- 08:00am-09:00am : Registration
- 09:00am-09:30am : Opening and General Information
- 09:30am-10:20am : Round One-MC Challenge
- 10:20am-10:30am : Break
- 10:30am-11:30pm : Round Two-Team Round*
- 11:30am-12:30pm : Lunch
- 12:30pm-01:30pm : Keynote Speech/Halftime Show
- 01:30pm-03:30pm : The Great Final and Award Ceremony

*Note: While the team members are taking the team round, alternates will be taking an additional test named "Alternate Challenge" in a separate room to be announced.