

# Carderock Math Contest

## Rules and Regulations

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The following rules and procedures govern the Carderock Math Contest (CMC) competition. These are based on the MATHCOUNTS® COMPETITION SERIES Rules and Regulations but are tailored to the CMC's unique competition.

### Overview

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The Carderock Math Contest is held at the Naval Surface Warfare Center, Carderock Division (NSWCCD) in West Bethesda, Maryland. The competition is typically held on a Friday from 7:30AM – 2:30PM. This is a free, day-long event featuring a MATHCOUNTS®-style competition, interactive tours of the U.S. Navy's premier laboratory for ships and submarines, and a presentation aimed at encouraging middle school students' interest in science, technology, engineering, and mathematics (STEM) activities.

### Registration

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For your school to participate in the Carderock Math Contest, a school or math club representative is required to complete a registration form. This representative can be a teacher, administrator, or parent volunteer who has received express permission from the child's school administration to complete the registration process. By completing registration, the representative attests to the school administration's permission to register students for the Carderock Math Contest.

Each school is invited to bring up to 8 students, 1 teacher, and 2 additional chaperones (if needed, though not required). A minimum of 1 adult for each school/club is required to attend the competition and act as the Point of Contact. No Point of Contact can be affiliated with more than one school/club.

#### Registration Deadlines:

The registration deadline will be sent out with the notification of registration opening, typically in January of each year.

#### Security:

All participants – students, teachers, and chaperones – will be required to submit for a background check in accordance with NSWCCD policy. Specific guidelines regarding visitor access to NSWCCD will be distributed after registration for the event.

Due to NSWCCD foreign-visitor requirements, the *additional chaperone(s) may not be a foreign national*. However, the main Point of Contact bringing the competitors to base, be it teacher or math club representative, may be a foreign national if the CMC organizers are made aware prior to the registration deadline. Additionally, competitors who are foreign nationals are allowed to participate.

## Eligibility Requirements

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### Who IS Eligible:

Students (including home-schooled students) enrolled in the 6<sup>th</sup>, 7<sup>th</sup> or 8<sup>th</sup> grade from the District of Columbia, Maryland, and Virginia (i.e., the DMV).

### Who is NOT Eligible:

Students outside of the DMV area or students who are not full-time 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> graders cannot participate, even if they are taking middle school math classes.

### Number of Students Allowed:

A school or math club can register a maximum of two teams, each consisting of four students, into either the Port or Starboard division of competition. A school/club must sign up for a single division. Splitting students between the Port and Starboard divisions is not permitted. A school/club decides if their students are at the Port or Starboard level at registration.

If a school/club has more than eight students that wish to participate, a second Point of Contact for these additional students must be provided, and these students' names will be added to the waitlist. The students on the waitlist, with a second Point of Contact, will be selected to participate if room is available after CMC registration is closed. The schools/clubs on the waitlist will be notified as to their status soon after registration is closed.

### Number of Years Allowed:

Participation in the Carderock Math Competition is limited to 3 years for each competitor.

### Substitution of Competitors:

Due to security concerns, base access requests for each competitor must be finalized one week prior to the competition date; no competitor substitutions will be permitted after that date.

### Competitors with Special Needs:

Reasonable accommodations may be made to allow competitors with special needs to participate. However, many accommodations that are employed in a classroom or teaching environment cannot be implemented in the competition setting.

Accommodations that are not permissible include, but are not limited to: granting a competitor extra time during any of the competition rounds or allowing a competitor to use a calculator for the Sprint or Countdown Rounds. *A request for accommodation of special needs must be directed to the contest coordinators in writing at least three weeks in advance of the competition.* This written request should include the competitor's special need as well as the desired accommodation.

### Number of Competitors Allowed:

Due to the availability of rooms on the NSWCCD base for any given contest, the allowable capacity of competitors is subject to change. A waitlist may be utilized in order to ensure that the maximum number of competitors will be allowed to participate in the contest.

## Levels of Competition

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There are two levels of competition at the Carderock Math Contest: Port and Starboard. The Port level is a more challenging test, while the Starboard test is less difficult in order to provide students that are rather new to competitive math the chance to participate. Schools/clubs will place their competitors into the appropriate division in which they fall at registration. All three categories of written tests (Sprint, Target, and Team) have separate Port and Starboard levels.

*Note: Only competitors who are in the Port level of testing are eligible to advance to the Countdown round.*

## Competition Components

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The four rounds of the Carderock Math Contest are described below:

### Sprint Round: (40 minutes)

Consisting of 30 problems, this round tests accuracy, with the time period allowing only the most capable competitors to complete all of the problems. Calculators are not permitted.

### Target Round: (30 minutes)

In this round, eight problems are presented with a purpose to engage the competitors in mathematical reasoning and problem-solving processes. Problems assume the use of calculators.

### Team Round: (20 minutes)

In this round, interaction among team members is permitted and encouraged as they work together to solve ten problems. The teams consist of four competitors from the same school/club. Problems assume the use of calculators.

Due to unforeseen circumstances on the day of the competition, teams may have fewer than four contestants. In such a situation, the team will still be scored as if they had a full team (total individual rounds will still be divided by 4). Schools within the same division (Port or Starboard) with incomplete teams may combine to make a full team of four contestants with express permission from the CMC organizers.

Note: The order in which the written rounds (Sprint, Target, and Team) are administered is at the discretion of the CMC organizers.

### Countdown Round:

A fast-paced oral, bracket-style competition for top-scoring individuals (based on scores on the Target and Sprint Rounds). This round allows the competitors to compete against each other, and the clock, to solve problems. Calculators are not permitted.

The top eight individual scorers from the Port Division will be seeded 1<sup>st</sup>-8<sup>th</sup>. Seeding for 9<sup>th</sup>-16<sup>th</sup> places is determined by the top individuals from Port Division teams not already represented in the 1<sup>st</sup>-8<sup>th</sup> seeds. However, no school/club will qualify more than three competitors to the Countdown Round. Tie-breaking procedures are explained in the "Scoring" section.

## Countdown Round Procedure:

- For each question throughout the round, competitors will have a maximum of 45 seconds to try to be the first to correctly answer each question.
- *First Round* (16 competitors – 4 groups of 4): Four (4) competitors are on-stage at a time within the grouping based on their seed. The first two (2) competitors to answer two (2) questions correctly will advance to the next round, with the others eliminated from competition.
- *Quarter-Final Round* (8 competitors – 2 groups of 4): Two (2) competitors out of four (4) need to correctly answer two (2) questions in order to advance, with the others eliminated from competition.
- *Semi-Final Round* (4 competitors): Competitors must answer three (3) questions to advance. The first two (2) competitors to answer three (3) questions correctly will move on to the Championship Round.
- *Consolation Round* (2 competitors): The non-advancing competitors from the Semi-Final Round will compete, head-to head, with the first competitor answering three (3) questions correctly being awarded 3<sup>rd</sup> place.
- *Championship Round* (2 competitors): The advancing competitors from the Semi-Final Round will compete, head-to head, with the first competitor answering three (3) questions correctly being awarded 1<sup>st</sup> place, and thus overall CMC Champion. The remaining competitor will be awarded 2<sup>nd</sup> place.

## Scoring

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Carderock Math Contest scores do not conform to traditional grading scales found at schools. Schools/clubs and competitors should view an Individual Score of 23 (out of a possible 46) as highly commendable.

### Individual Score:

Calculated by taking the sum of the number of Sprint Round questions answered correctly and twice the number of Target Round questions answered correctly. There are 30 questions in the Sprint Round and eight questions in the Target Round, so the maximum possible Individual Score is  $30 + 2(8) = 46$ .

### Team Score:

Calculated by dividing the sum of the team members' Individual Scores by four (*even if the team has fewer than four members*) and adding twice the number of Team Round questions answered correctly. The highest possible Individual Score is 46. Four

competitors may compete on a team, and there are 10 questions in the Team Round. Therefore, the maximum possible Team Score is  $((46 + 46 + 46 + 46) \div 4) + 2(10) = 66$ .

## Ranking Procedures:

Individual and team winners are chosen by sorting their respective scores from highest to lowest.

In the event of a tie between two individuals, the tie is broken using Sprint Round results starting with Question 30 and moving backwards. The individual who answered Question 30 correctly is given the higher ranking. If both or neither of the tied individuals correctly answered Question 30 then the same procedure is used for Question 29 and so on until separation can be found. If the tie remains after examining the Sprint Round, the Target Round will be used in the same manner starting from Question 8 and moving backwards. If the tie still remains after using the Target Round, the tie will stand and a coin will be flipped to determine Countdown Round seeds. If more than two individuals are tied, the same procedure can be used to break the ties progressively.

In the event of a tie between two teams, the tie is broken using Team Round results starting with Question 10 and moving backwards. The team that answered Question 10 correctly is given the higher ranking. If both or neither of the tied teams correctly answered Question 10 then the same procedure is used for Question 9 and so on until separation can be found. If the tie remains after examining the Team Round, the Sprint Round will be used in a similar manner as the tie-breaking procedure for Individuals, using the percentage of correct answers amongst the team members for each question. If the tie remains after examining the Sprint Round, the Target Round will be used in the same manner starting from Question 8 and moving backwards. If the tie still remains after using the Target Round, the tie will stand. If more than two teams are tied, the same procedure can be used to break the ties progressively.

## Additional Rules

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All answers on the test answer sheets must be legible.

A pencil and scratch paper will be provided for competitors by CMC organizers. However, competitors may bring their own pencils, pens, and erasers if they wish. They may not use their own scratch paper or graph paper.

Use of notes or other reference materials (including dictionaries and translation dictionaries) is prohibited.

Specific instructions stated in a given problem take precedence over any general rule or procedure.

Communication between school/club representatives and competitors is prohibited during the testing rounds but is permitted during breaks. Communication between teammates is permitted only during the Team Round.

Calculators are not permitted in the Sprint and Countdown Rounds, but they are permitted in the Target and Team Rounds. When calculators are permitted, competitors may use any calculator (including programmable and graphing calculators) that does not contain a QWERTY (typewriter-like) keypad. Calculators that have the ability to enter letters of the alphabet but do not have a keypad in a standard typewriter arrangement are acceptable. Smart phones, laptops, tablets, iPods®, personal digital assistants (PDAs), and any other “smart” devices are not considered to be calculators and may not be used during competitions. Competitors may not use calculators to exchange information with another person or device during the competition.

Schools/clubs are responsible for ensuring their competitors use acceptable calculators, and competitors are responsible for providing their own calculators. CMC organizers are not responsible for providing the competitors with calculators or batteries before or during the CMC. School/club representatives are strongly advised to bring backup calculators and spare batteries to the competition for their team members in case of a malfunctioning calculator or weak or dead batteries.

Cell phones, iPods®, and other MP3 players should not be visible in the competition room(s). Failure to comply could result in dismissal from the competition.

Any cheating discovered during any round of the competition will result in a competitor’s score for that round being zero.

**ABSOLUTELY NO PICTURE TAKING IS ALLOWED AT THE CMC. As this competition is held on a U.S. Navy base, NO ONE (teachers, chaperones, or competitors) is authorized to take any pictures during the day.** CMC organizers have scheduled a base photographer to take pictures during the day, as well as during the awards ceremony. A link to these pictures will be provided in the registration packet given to the school/club representative at the competition.

**In accordance with NSWCCD policy, NO ONE (teachers, chaperones, or competitors) is permitted to bring laptops or tablets on base.**