
Contest Corner: Getting Elementary and Middle Childhood Students Involved in Math Clubs

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Abstract: This article describes the importance of using math clubs in grades K-8. Math clubs are a way to help eliminate numberphobia which is an anxiety disorder. Resources are referenced for developing a math club including suggested materials from MathCounts, Math Club, and Math Video Challenge.

Keywords: Problem solving, contests

Introduction

Recall the term *arithmophobia*. Arithmophobia is sometimes referred to as numerophobia and refers to a fear of numbers. For many students this is a real issue. This fear is an anxiety disorder that affects a person's ability to do mathematical calculations and results in not only poor mathematical academic performance, but also in poor self-confidence regarding one's ability to do mathematics. Research has shown that math anxiety can interfere with learning new math concepts as well as the recall of previously-mastered concepts. Getting involved in math clubs at a young age provides students with the opportunity to engage in mathematics in fun and enjoyable ways—thus helping them avoid math anxiety in their later years.

Math Clubs in the Early Grades

A math club is a chance for everybody to have fun with math in a risk free, fun-filled environment. In the elementary school, math clubs traditionally meet after school, but could also meet during lunch or before school. It is important that the time the club meets will allow all students who wish to attend an opportunity to do so. It is suggested that math club activities be fun, collaborative, engaging and even surprising for the students.

Math clubs in elementary school can begin as young as Kindergarten. Typically, math competitions begin in the fifth grade. For more information on elementary math clubs you can visit <http://njlovesmath.com/elementary-math-clubs-explained/>. Free activities are available for students from kindergarten through fifth grade.

Math Clubs in Middle School

When students transition to middle school, MathCounts offers numerous opportunities for middle childhood educators to engage students in meaningful mathematics, offering three different platforms for middle school students to engage in meaningful mathematics. Information regarding each platform from the MathCounts website (<https://www.mathcounts.org/>) is provided below. We encourage you to visit the MathCounts website for more information.

Math Club

Math Club is a national middle school mathematics enrichment program that gives educators the resources and guidance needed to run math clubs in schools and other groups. Math club is completely free. The National Math Club is designed to be flexible so many types of groups can participate. Game instructions, math exploration and problem sets that can be enjoyed by student at various levels. The games are designed to build problem solving and math skills. The games can be adjusted in difficulty so they are accessible to all students. These games typically do not feel like math to the students, so they can be used as a great way to reach students who think math is boring or intimidating. Explorations go in depth with various math topics and give students the opportunity to collaborate on hands-on and interactive math activities. The explorations allow students to build their number sense and math literacy in fun and unthreatening ways. The final type of resource in Math Club is problem sets. Problem sets target specific skills or are themed. The activities allow students to practice specific skills or celebrate holidays with unique math problems that are fun and engaging to solve. Math Club can be a starting point to spark student's interest in joining MathCounts.

MathCounts

MathCounts is a national middle school mathematics competition that builds on problem-solving skills and fosters achievement through four levels of fun, in-person "bee" style contents. There are four levels of competitions, school, chapter, state and national. Each level of competition consist of four rounds—Sprint, Target, Team and Countdown Rounds. The sprint round focuses on speed and accuracy. Students have 40 minutes to complete 30 math problems, without a calculator. The target round focuses on problem-solving and mathematical reasoning. Students receive four pairs of problems and have 6 minutes to complete each pair, with the use of a calculator. The team round focuses on problem solving and collaborations. Students have 20 minutes to complete 10 math problems, with the use of a calculator. Only four students on a school's team can participate in the team round. The last round is the countdown round. This round focuses on speed and accuracy. Students have a maximum of 45 seconds per problem, without the use of a calculator. This round is optional at the school, chapter and state level. MathCounts costs \$35 per competitor, based on the number of competitors that will represent the school at the Chapter Level Competition. Schools with 40% of students on free or reduced lunch, or receiving School Wide Title I funding will receive a discount. Schools and non-school competitors practice during the Fall Quarters. Early registration opens at the beginning of November. Coaches typically administer the school competition to select Chapter competitors.

During the month of February 500 Chapter competitions are held across the country. Schools can send up to 12 competitors, four competitors for the team and individual rounds and 8 individuals to compete in the individual round only. Non-school competitors can only compete as individuals. In March, the top students from each chapter advance to their state competition. State competitions occur in all of the 50 states, plus US territories. No additional fees are collected for these state competitions. Then in May the top four individuals from each state and territory competition receive an all-expense paid trip to the National competition, where the competitors compete at the team and Individual levels for the title of National champion.

Math Video Challenge

Math Video Challenge is a project-based team contest in which students create a video that shows a solution to a MathCounts problem in a real-world setting. To determine advancement and prizes, videos are evaluated based on the following four categories: mathematical content, communication, creativity and real-world scenario. Videos with high scores on mathematical content will feature an appropriate approach to solving the problem selected. Judges determine if teams made any mathematical errors – and if so, to what extent those errors affect the clarity of the solution.

The mathematical content is approximately one-third of the video's total score. Videos with high scores on communication, communicate the math and solution clearly and logically. Judges determine if teams used their time effectively, since the videos can be no longer than five minutes. Communication is also one-third of the video's total score. The third aspect considered in the evaluation of videos is creativity. Videos that receive high scores on creativity are viewed by the judges as original and memorable. Judges give higher marks to

videos that show imagination in costume/set design, special effects, screenplay and acting. Creativity is approximately one-sixth of the video's total score.

The fourth category the videos are scored on is real-world scenario. Videos with high scores on real-world scenario present a clear, real-world application of the math concept explored. Teams that develop their own scenario, rather than using a scenario provided by MathCounts, will get higher marks. The real-world scenario is the final one-sixth of the video's total score. The amazing component of the Math Video is the integration of math and the arts. Students from Math Club and other clubs can work together to make a math video. High-scoring videos can be viewed at <https://www.mathcounts.org/programs/math-video-challenge>.

Additional MathCounts Resources

MathCounts provides Mini's, Problem of the Week (and past weeks), past competitions, and an online problem database at <https://www.mathcounts.org/resources>. The Math Video Challenge videos can also be accessed. MathCounts coaches and math club leaders receive free access. All of these resources are aimed to allow all students to engage in meaningful mathematics using fun activities, collaborating with others, and growing both academically and socially.

In Conclusion

Students who engage in math clubs and math competitions in elementary and middle schools will develop an appreciation for the beauty of math and are more likely to continue math competition activities in the high school. We encourage you to learn more and start a math club at your school!



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