

Informal Student Problem Competition

Spring 2011 MAA-EPaDel Meeting

Organized by Molli Jones and Pat Gorman

Overview

Randomly assigned teams of three to four students will work on a set of twelve competition-type problems for forty-five minutes. The problems have answers that are easily verified, such as a single word or number. Most problems do not require knowledge beyond freshman-level coursework. Every time a team answers a problem correctly, each team member is given a raffle ticket, which they can either place in the prize bucket or the bonus-round bucket. Students will be allowed to resubmit answers if they are incorrect on their first response. At the end of the forty-five minutes, tickets will be drawn from the prize bucket to give away mathematically-themed prizes and eight names will be drawn from the bonus-round bucket to compete in the bonus-round tournament. The bonus-round will feature mental arithmetic problems. The winner of the bonus-round tournament will win the grand prize.

Inspiration

At the Joint Math Meetings in 2010, I attended the MAA Session on “My Most Successful Math Club Activity.” In particular, I heard a presentation given by Dr. Pamela Richardson, the “Puzzle Czar” of the Allegheny Mountain Section. She described a math competition with a unique format. I was inspired by her success and took these ideas back to our section, and we used this to create our own competition. The bonus-round described above was our own addition.

Feedback

Our section felt that this event was very successful. About thirty-five students participated in the competition. This was about half of the students that attended the meeting. We are hoping for better participation once there is a better understanding of the format of the competition. The students were randomly assigned to teams, so they were able to interact with students from other institutions. This is not something that typically happens to a great degree at our section meetings. In the future, we don't think it will be necessary for them to sign up ahead of time. We simply assigned them to teams as they walked in by handing out name tags that were pre-labeled with the group numbers. We feel that this will increase our participation rate as well.

The questions were designed so that all of the groups of students got at least one question right and none of the groups finished all of the questions in the allotted time. The students liked that they could resubmit answers, and we did not have any trouble with students trying to guess the answers. The “Bonus Round” added an interesting element to the competition. This portion allowed those students that were comfortable with mental arithmetic to perform for their peers. It also allowed the other students to act as spectators to a pretty exciting competition. The prizes that were provided for the raffle tickets were games and puzzles. For the head-to-head competition, we presented the first and second place finishers with gift certificates.

Detailed Rules for the Competition:

- Any student interested in participating in the competition must sign up at the registration desk when they check in on the day of the conference. Any faculty member interested in assisting in monitoring the competition should sign up then as well.

- Students will be randomly assigned to teams of three or four students. The team assignments and faculty monitors will be posted outside the competition rooms during the lunch break.
- Students will be provided with the problem set, blank paper, and pencils. There are no calculators, cell phones, or other electronic devices allowed during the competition. Students will be given exactly forty-five minutes to work on the problems.
- If a team feels they have a correct answer, they will send one representative to a faculty monitor located at the front of the room. If the faculty monitor accepts the answer, each team member will be given one raffle ticket. If the faculty member does not accept the answer, the representative must consult with the team before submitting another response to the same problem. Teams may submit answers to more than one problem at a time.
- Students must write their names legibly on the raffle tickets before placing them in the buckets located at the front of the room. Raffle tickets may be placed in either the prize bucket or the bonus-round bucket.
- Once the forty-five minutes are complete and time is called, no new answers may be submitted. Any student already waiting to check answers with the faculty monitors will be checked, and all raffle tickets will be placed in the buckets.
- If there are multiple rooms for the competition, all participants will be gathered in a central location. The prize buckets will be combined, and six distinct names will be drawn and prizes will be selected on a first-come, first-serve basis. The bonus-round buckets will be combined, and eight distinct names will be drawn. These eight students will compete in a bonus-round tournament. The winner of the bonus round will win the grand prize for the competition.

Detailed Rules for Showdown Round

- Eight names will be drawn from the entries, and placed in a bracket in the order drawn.
- The tournament will consist of three rounds, each having a “head-to-head” showdown of mental math problems.
- Each head-to-head round will consist of arithmetic questions. The question will be posed, and the contestants will have thirty seconds to ring in and answer.
- If the first person to ring in gets the answer correct, the player receives two points. If not, the second player gets one point, and a chance to respond. If the second player responds correctly, that player receives an additional point. If the second player chooses not to respond, the contest will move on to the next question. If the second player chooses to respond and is incorrect, then the first player will receive a point.
- The first player to accumulate four points will move on to the next round.
- The winner of the tournament is the player who wins in the championship round; the second place person is the loser of that round.