

0N-56-B-23



# The AMC5: An Initiative by the MAA MD-DC-VA Section



Randall E. Cone, Ph.D. - Virginia Military Institute - 2013 Fall MAA MD-DC-VA Section Meeting

*Abstract:* “The MAA’s American Mathematics Competitions (AMC) are annual events designed to encourage young mathematical talent in our nation’s middle and high schools. In hosting these tests, some institutions from the MAA MD-DC-VA Section have had significant participation from regional school systems. This, in turn, illustrates tremendous desire by our public school systems for such mathematically substantive activities. Presently, there exist few AMC-type events for elementary school students. In consideration of these latter two points, the MD-DC-VA MAA Section has formed a large development team for a new grades 3-5 mathematical event: the AMC5.

In this talk, we discuss the project’s goals, illustrate example AMC5 competition problems, and describe the foundational divergence of this project (both in format and substance) relative to other competitions and standardized tests. In addition, we encourage other section members to get involved in the AMC5 and highlight the recent positive national press the project has received.”



**Why?**



# AMC5

A MATHEMATICAL EVENT for

## GRADES 3-5

Created by the Mathematical Association of America,  
MD-DC-VA Section<sup>1</sup>

Fall 2013

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<sup>1</sup>Development Team: (members). Problems written by: Cone, Greenstein, and Herald

## Introduction

This is not a standardized test. The AMC5 is meant for everyone. It is a competition event unlike anything you may've seen before. The fundamental intent of the AMC5 is to set the stage for a substantive, positive, mathematical event for you and your students. There are two major sections of the AMC5 event.

### 1.1 Individual Challenge Event

The first section of the AMC5 is a challenge “test” for individual students. We refer to this section of the AMC5 as the Individual Challenge Event or (ICE). The recommended time allotment for students to take the ICE is 40 minutes.

### 1.2 Team Challenge Event

The second section of the AMC5 is a team challenge. Students form teams to answer questions for the Team Challenge Event (or TCE), recording the number of members on their team, each doing so on the AMC5 answer form. Students may discuss any of the TCE questions with all members of their group. They may choose to agree with their group's answers for the TCE questions or they may choose to disagree. In either case, students must mark their own tests individually, for both the TCE and ICE sections of the AMC5. The recommended time allotment for students to take the TCE is 60 minutes.

## 2.1 ... for Teachers

The first section of this event (ICE) is meant to be worked individually by students. They should mark their own answers, work alone, and without computer or calculator aid. The second section of the event is much more dynamic, wherein students should form teams and work on the TCE problems together. Remind the students that sometimes the team's collective answers are correct and sometimes not! Problems from each of the sections may have single correct answers, multiple correct answers, or weighted answers (good, better, best).

## 2.2 ... for Students

This is not your typical multiple choice test. All questions have multiple choice answers, but they don't always have a single correct answer. Here are the possible ways you could answer a question:

1. pick **one** of the choices as your answer;
2. pick **more than one** of the choices as your answers;
3. pick **all** of the choices as your answers.

4. There are 21 students in Marcia's homeroom class and 19 in Marcus' homeroom. The technology lab has 34 computers. How many students will need to share a computer when both classes are in the lab at the same time?

- a) 5
- b) 6
- c) 7
- d) 9
- e) 12

5. Marcus had fewer than 25 cube-shaped blocks. When he made five equal rows, he had one left over. When he made seven equal rows, he had two left over. How many cubes could be left over if Marcus makes six equal rows?

- a) 0
- b) 2
- c) 3
- d) 4
- e) 10

## Team Challenge Event

Take 50 minutes to work on these questions with your team. Be sure to write down the number of members on your team. Remember: you must mark your own answers on your answer sheet, but you don't have to agree with your team if you believe you have a better idea! Also remember: some questions may have more than one correct answer!

1. Suppose we have eight people who want to form groups by pointing at each other. Every person must point at one and only one other person (but they can't point at themselves). A "group" is formed when everyone in that group is pointing at someone else in that same group. We say two groups A and B are "disconnected" if no one from group A is pointing at anyone from group B and vice versa. What is the minimum number of groups these eight people can form?
  - a) 0
  - b) 1
  - c) 2
  - d) 4
  - e) 8

3. Suppose now we have eight new people who also want to form groups by pointing at each other, but in a different way. Every person must point at two different people (but they can't point at themselves). A "group" is formed when everyone in that group is pointing at someone else in the group. We say two groups A and B are "disconnected" if no one from group A is pointing at anyone from group B and vice versa. What is the minimum number of groups these eight people can form?

a) 0

b) 1

c) 2

d) 4

e) 8

0N-66-8-23



## Thanks to:

*MAA MD-DC-VA Section and MAA National  
VMI Mathematics Department*

*Organizers of these sessions and the Fall 2013 MAA Section Meeting  
You, the Audience!*

