

### Apogee Program Session 2

**Course Title:** Math Madness!

#### Course Description

Caution: These problems may drive you wild! But, armed with motivation and problem-solving skills, you're bound to triumph. Using problems from The Art of Problem Solving, American Mathematics Competitions, and MATHCOUNTS, students learn concepts from pre-algebra, algebra, and geometry and utilize a wide range of problem-solving tactics. Math Madness! activities engage students who love number problems and puzzles, and who seek a greater challenge in mathematics.

#### Essential Questions

How do you best approach solving a complex problem?

Why is it best to understand concepts rather than memorizing formulas?

#### Outcomes

Upon successful completion of this course, students will:

- Gain knowledge of dozens of topics found in competition math classes
- Understand concepts that go into solving complex problems from the best middle school mathematics sources
- Be able to correctly solve hundreds of difficult competition math problems

#### Instructional Strategies

Students will have their learning geared towards their needs in this course. If a student demonstrates that they have a high level of prior knowledge, they will be given alternate assignments or more difficult assignments. Students will be grouped by ability level based on their level of knowledge in a given topic. Students will also be challenged to go above and beyond their current level and attempt more difficult problems than ones that they are ready for using the "hardest first" strategy.

#### Resources and Materials

- **Books**  
Batterson, Jason. Competition Math for Middle School. ISBN # 978-1441488879
- **Web sites**  
Art of Problem Solving, [www.artofproblemsolving.com](http://www.artofproblemsolving.com): the best resource for gifted and talented mathematics students on the Internet
- **Other Media**  
American Mathematics Competitions, Mathcounts, instructor-written problems
- **Materials**  
Calculator, notebook

#### Student Assessment

- **Pre-Assessment**  
Students will take the 2011 Mathcounts Chapter round
- **Documentation of Learning**  
Student progress will be tracked based on topics studied, contests taken, and concepts learned, by a combination of student and instructor documentation
- **Post-Assessment**  
Students will take the 2011 Mathcounts Chapter round on the final day to see their improvement. They will also compete against their parents in a Mathcounts “Countdown” round.

## Schedule

Date	Topic(s)	In-class Activities	Assignments/Assessments
M 7/18	Algebra	Math Counts chapter contest AMC 8 contest	Art of Problem Solving account  Write a problem
T 7/19	Algebra	Math Counts chapter contest AMC 8 contest	For the Win
W 7/20	Algebra	Math Counts contest	Competition Math assignment
T 7/21	Counting	Math Counts contest AMC 8 contest	AOPS assignment
F 7/22	Counting	Math Counts contest	Countdown
M 7/25	Counting	Math Counts state contest	Write own problems
T 7/26	Probability	Math Counts state contest	For the Win
W 7/27	Probability	Math Counts contest AMC 8 contest	Competition Math assignment
T 7/28	Probability	Math Counts contest	AOPS assignment
F 7/29	Number Theory	Math Counts contest	Countdown
M 8/1	Number Theory	Math Counts national contest	Class problem book
T 8/2	Number Theory	Math Counts contest	For the Win
W 8/3	Geometry	Math Counts contest	Competition Math assignment
T 8/4	Geometry	Math Counts contest	AOPS assignment  EXPO
F 8/5	Geometry	Math Counts contest	Countdown  EXPO

## CTD Statement on Third-Party Web Sites

Instructors are required to thoroughly review any third-party web sites they intend to use in their courses for inappropriate content. However, because web content continuously changes, CTD disclaims any responsibility for any of the content contained on third-party web sites used in course materials. If you become aware of anything that may be inappropriate, please notify CTD staff immediately.