华夏数学
数学竞赛类

目标：针对数学有兴趣特长及具备一定基础的学生。通过训练，帮助同学在各种比赛中取得优异成绩。

课程：Number Sense
小学数学竞赛 初级，中级和高级
中学数学竞赛 AMC 8， AMC10

辅导老师：刘秋华 博士
于成飞 博士
刘怡君 博士
刘 滨 博士
刘立峰 老师

课程设置：

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Instructor: 于成飞博士

Course Syllabus
Number Sense is geared toward students in grades 4-5, and focuses on improving the speed and accuracy of their calculations. The Number Sense test is a 10 minute, 80-question mental math test covering all basic math concepts and operations: addition, subtraction, multiplication, division, square, square root, fraction, decimal, percentage, probability, geometry, number theory, Roman numerical, base conversion, sequence, and estimation. In addition, shortcuts need to be developed and practiced in order to compete and finish the test.

Prerequisites
Students should already be familiar with basic four operations: addition, subtraction, multiplication and division, and the students should know about fractions and decimals.

Course Descriptions & learning objectives:
After taking Number Sense, students will have a solid foundation of fundamental mathematical techniques and its various shortcuts. This class is very helpful for those wishing to do competition math in the future, or for those wishing to build a stronger mathematical foundation for school.
Course Syllabus
Pre prealgebra is geared toward students in grades 4-5, who has finished number sense class. This class focuses on the preview for the hard concepts in pre-algebra such as exponent, root, Geometry and counting and probability. In addition, number sense tricks are reviewed as well.

Target Students:
4-5年级的孩子，已经上过number sense，但是还没有ready prealgebra的学生
为将来学习pre-algebra打基础。
这个课程会预习pre-algebra课程的难点概念比如exponent, root, Geometry, Counting and probability.
复习，巩固number sense class所学的内容。
Instructor: 刘秋华博士

Course Syllabus
Pre-Algebra: Topics include the properties of arithmetic, exponents and exponent laws, primes and prime factorization, fractions, linear equations, inequalities, decimals, ratios, proportions, rates, percents, square roots, basic geometry, statistics, counting and probability

Target Students:
Advanced 4th and 5th grade students who just starts math contest.

Course Descriptions & learning objectives:
This course will be focusing on prealgebra topics that appears in elementary school math contests, including mathleague, MOEMS, and TMSCA.

Required Prerequisites
Regular Elementary school math

Required Text & Resources:
Book: AOPS Pre-Algebra
Course Syllabus

Target Students:
Advanced 5th to 6th grade students who completed pre-algebra.

Course Descriptions & learning objectives:
This course will be focusing on the first half of the book of AOPS Introduction to Algebra.

Required Prerequisites
Pre-Algebra 初级代数

Required Text & Resources:
Book: AOPS Introduction to Algebra
**AMC 8**

老师：刘滨

本课程数学老师Dr. Liu一直关心并参加华夏中文学校的数学教育工作。在华夏中文学校成立的早期，首次开设与数学竞赛有关的数学课程。20多年来对全国数学竞赛系列AMC 8/10/12/AIME, MATHOUTS, 和德州数学竞赛TMSCA和NumberSense，UIL general math都有很深的研究。Dr. Liu上课内容生动，侧重于挖掘逻辑推理能力，强调基础知识的灵活运用，并善于引导学生开拓解题思路。受到广大同学的欢迎。

为提高数学水平，以及数学竞赛能力，我们计划将开设“Competition Math for Reasoning”课程。该课程是基于如下想法：

1. 对知识的融会贯通非常重要。解题思路是化繁为简。只做难题偏题，事倍功半。

2. 要引导学生开拓思维。一道题得到了正确答案不是最重要的，也不是终点，要鼓励教导学生一题多解。对同一个问题进行不同角度的分析，归纳总结，提高认知。

3. 循序渐进，能力提高了，认知水平提升了，成绩就是水到渠成。

American Mathematics Competitions (AMC), a program organized by the Mathematical Association of America, is a nation-wide competition that strengthens the mathematical capabilities of problem-solvers. The annual competition has increased to over 300,000 student participants.

It is easy for students to be entwined by the complexity of mathematics problems. However, for students to advance their analytical skills in competitive problem solving, it is key for them to understand how to explore and simplify intricate questions by employing fundamental knowledge in mind. The course “Competition Math for Reasoning” will allow students to adapt to “making complex ideas simple and not making simple ideas complex”, which will help students enhance their potential for problem solving. There will be two classes every week for total five weeks. Each class’s duration will be two hours. The class will use AMC 8 problems to cover core curriculum material and additional MATHCOUNTS problems will be used for supplemental learning.