



AMC 10S -2024

Course Description & Goals

Organized by the Mathematical Association of America (MAA), American Mathematics Competition (AMC) is a series of examinations to evaluate problem-solving skills and mathematical knowledge in middle and high school students. AMC10 is for students in 10th grade and below and covers the high school curriculum up to 10th grade and more. AMC 10 is the first in a series of competitions that eventually lead all the way to the International Mathematical Olympiad. Top performers in AMC 10 will be invited to American Invitational Mathematics Examination (AIME), and the score of AIME and AMC10/12 will be evaluated to see if a student is qualified to attend USA Junior Mathematical Olympiad (USAJMO). This math competition is a great tool that helps students form a passion for math and analytical thinking. The nationally recognized competition is also a standout extracurricular on college applications. To prepare students for AMC10, the official AMC10 exams over the past two decades have been analyzed and the core topics have been summarized. Based on the informed analysis, this 40 sessions AMC10 course is well-designed to help students master the best approaches to solving the math problems covered in AMC, especially the problems that students could make mistakes and challenging problems at a hard level. All lectures are given in English.

Instructor

John Kim – STEM & ROOT Academy Founder

Tentative Class Schedule

2024 Summer

- **Period:** 6/12-8/9 (24 sessions, 48 hours), *No Class: 7/3, 7/5 (*Independence Day*)
- **Time:** 6-8PM (PT), Mon / Wed / Fri

2024 Fall: 8/19-11/8 (24 sessions, 48 hours)- 2 hours/session * 2 sessions/week * 12 weeks

**AMC10 Exam Date: November 2024*

Class Format

- Zoom (Live Online) - Lecture
- Google Classroom
 - Providing Lecture Materials and other materials
 - Assigning / grading HW
 - Communicating with students
 - Keeping students informed of current and upcoming events



Course Materials

- We will provide **all class materials** in the PDF format (Textbook, Problem packets, Simulation Tests, etc.)
- 3- ring binder (or other organizer of choice for lecture notes and handouts): **Lecture materials should be printed out** and organized in order.
- Textbooks: Pre-algebra, Introduction to Algebra, Introduction to Counting and Probability, Introduction to Geometry, Introduction to Number Theory (All published by AoPS)

Class Policies, Expectations and Rules

- Join every class on time (**5 min prior to each class**) with your materials (lecture notes, textbook, supplementary handouts) out and ready.
- Spend at least 30 minutes (**right before each class**) reviewing/previewing materials.
- Turn on webcam and **show your face**. I would like to see what you are up to, just as you would be required to attend in-person classes.
- **Take notes** while listening to my lecture.
- **Actively participate in Q&A** during the class.
- Submit assignments **on time** (due date/time for each HW will be set/notified via google classroom)
- Eating and drinking is allowed only if it does not cause any distraction.

Assignment Submission

- Homework must be submitted by **7PM (PT) a day before** the following class. Assignments will be graded as soon as possible such that students have enough time to make corrections and know what questions to ask before class.
- Your homework must be submitted as **“one” PDF or google doc file only. (No photos such as .jpeg)**
- **Recommended PDF file converters or apps** to write on PDF files
 - For PC/Mac, use www.combinepdf.com : jpeg → PDF conversion
 - For Tablet/Ipad: GoodNotes, Notability, Documents, Onenote, Samsung Notes.
 - For Phone: Camscanner- PDF scanner app
 - No Kami App– not compatible with google classroom. But if you still want to use Kami, generate PDF file using the app first and use www.combinepdf.com to do PDF → PDF conversion. Submit PDF file generated from the “combinepdf.com”

Multiple Choice Questions

1. E
2. A
3. D
4. A
5. E
6. B
7. C
8. D
9. A
10. E
11. E
12. C
13. B
14. C
15. A
16. B
17. D

Google doc

Chapter 45 Hormones and the Endocrine System

The questions in Chapter 45 have been revised to ensure that terms are consistent with those included in the textbook chapter and are also reorganized to mirror the reorganization of the chapter. In addition, some questions cover material presented in figures from the textbook chapter.

Multiple-Choice Questions

- 1) Which of the following statements about hormones is *incorrect*?
 - A) They are produced by endocrine glands.
 - B) They are modified amino acids, peptides, or steroid molecules.
 - C) They are carried by the circulatory system.
 - D) They are used to communicate between different organisms.
 - E) They elicit specific biological responses from target cells.
- 2) The secretion of hormone A causes a change in the amount of protein X in an organism. If this mechanism works by positive feedback, which of the following statements represents the fact?
 - A) An increase in A produces an increase in X.
 - B) An increase in X produces a decrease in A.
 - C) A decrease in A produces an increase in X.
 - D) A and B are correct.
 - E) B and C are correct.
- 3) Which of the following is (are) true?
 - A) Hormones regulate cellular functions, and generally negative feedback regulates hormone levels.
 - B) The circulating level of a hormone is held constant through a series of positive feedback loops.
 - C) Both lipid-soluble hormones and water-soluble hormones bind to intracellular protein receptors.
 - D) The ducts of endocrine organs release their contents into the bloodstream.
 - E) Only A and C are true.

PDF

1	D	4	D
2	A	5	B
3	A	6	C
4	A	7	BCE
5	D	8	C
6	A	9	A
7	B	10	A
8	C	11	A
9	A	12	D
10	A	13	D
11	B	14	E
12	C	15	B
13	D	16	DE
14	B	17	C
15	A		
16	A		
17	B		

jpeg/google doc

Notification of Absence & Make-up Policies

- Students/parents must notify STEM & ROOT Academy as promptly as possible of any absence (**at least 24h prior to a scheduled class**)
- If a student is going to be absent from class, we will send you a recording of the live lecture. You can also find the full content of the class in our google classroom so you can follow along and do homework.
- Make-up recording will be available only for **1 week**, until the following class.

Academic Dishonesty

Plagiarism (the practice of taking someone else's work or ideas and passing them off as one's own) is a severe offense. Examples of Academic Dishonesty include (not an exhaustive list): **copying work from another student or the internet, using online searches to find answers to questions**, posting answers to assignments online.

Course Curriculum

Themes	Topics
Algebra	Properties of Arithmetic
	Exponents
	Logical Reasoning
	Fractions
	Decimals
	Sets and Diagrams
	Factors
	Prime Numbers
	Ratio, Rate and Proportion
	Equations and Inequalities
	Special Symbols and operations
	Remainder
	Functions
	n^{th} Roots
	Number Theory
Divisibility	
Finding Patterns	
Sequence and Series	
Consecutive Integers	
Primes and Composites	
LCM, GCF	

Themes	Topics
Geometry	Transformation
	Perimeter and Area
	Pythagorean Theorem
	Angles
	Rectangles and Squares
	Similar Triangles
	Trapezoids
	Circles
	Volumes
	Counting & Probabilities
Complementary Counting	
Counting with Restrictions	
Correcting for Over-counting	
Permutations	
Combinations	
Probability Techniques	
Geometric Probability	
Data and Statistics	