



# AMC 10 A

## 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

**2025 Spring:** 1/29-6/4 (18 sessions, 36 hours), Wednesdays, 5-7PM (PT)

*\*No Class: 3/19 (Spring Break)*

**2025 Summer:** 6/10-8/7 (17 sessions, 34 hours) Tue, Thur, 3-5PM (PT)

*\*No Class: 7/3 (Independence day)*

**2025 Fall:** 8/13-11/5 (13 sessions, 26 hours)- 2 hours/session \* 1 sessions/week \* 13 weeks

*\*AMC10 Exam Date: November 2025*



## **Key Features of the Program**

- 100% instruction by the founder
- English-only, Live Zoom Classes
- Recorded lectures provided in case of absences
- Homework and grading included for every class
- 3–6 free practice exams (including remote proctoring and grading) are available during the later stages of the program.
- We will provide all class materials (Lecture notes, Study guides, Quizzes, Simulation Tests, etc.)

## **Class Format**

- Lecture
  - 1) Zoom (Live Online)
  - 2) Recorded Video- If the live class schedule does not work, we offer the option to take the entire semester through recorded sessions. All homework and materials will be provided, and homework submissions will be graded in the same way as for live classes.
- Google Classroom
  - Providing Lecture Materials and other materials
  - Assigning / grading HW
  - Communicating with students
  - Keeping students informed of current and upcoming events

## **Make-up Policies**

- If a student is unable to attend a class, we will provide a recording of the live lecture. Additionally, the full class content will be available in our Google Classroom, allowing students to stay on track and complete their homework.
- After attending the live class, if students request a recording for review, we provide it.
- Make-up recording will be available until the following class. Make sure to watch it as soon as possible to keep your pace. If an extension is needed, we will grant it upon request.
- Students/parents must notify STEM & ROOT Academy as promptly as possible of any absence.

## 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)

## 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, use [www.combinepdf.com](http://www.combinepdf.com) : jpeg → PDF conversion
  - For Mac/Ipad: GoodNotes, Notability, Documents, Onenote, etc.
  - 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](http://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

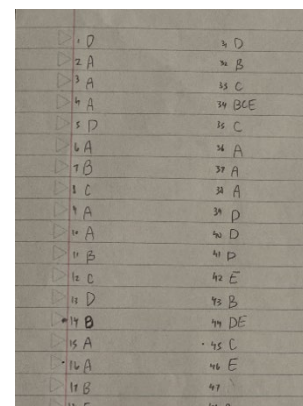
### Chapter 45 Hormones and the Endocrine System

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 what?
  - 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 extracellular protein receptors.
  - D) The cells of endocrine organs release their contents into the bloodstream.
  - E) Only A and C are true.

PDF



jpeg/google doc



## **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.

## **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	
	Functions	
	Ratio, Rate and Proportion	
	Equations and Inequalities	
	Special Symbols and operations	
	Number Theory	Diophantine Equations
		Square numbers and Cubes
$n^{\text{th}}$ Roots		
Even and Odd		
Divisibility		
Modular Arithmetic		
Sequence and Series		
Number Bases		
Primes and Composites		
LCM, GCF		

Themes	Topics	
Geometry	Geometric Shapes	
	Angle Relationships	
	Transformations	
	Properties of Triangles	
	Rectangles and Squares	
	Polygons	
	Circles	
	Solid Geometry	
	Coordinate Geometry	
	Counting & Probabilities	Counting & Probability Principles
		Permutations
		Combinations
		Binomial Theorem
Conditional combinatorics		
Inclusion-Exclusion Principle		
Expected Value		
Geometric Probability		
Data and Statistics		