JOHNS HOPKINS
CENTER *for* TALENTED YOUTH

CTY

ONLINE PROGRAMS

WE HELP BRIGHT KIDS SHINE.

CENTER FOR TALENTED YOUTH
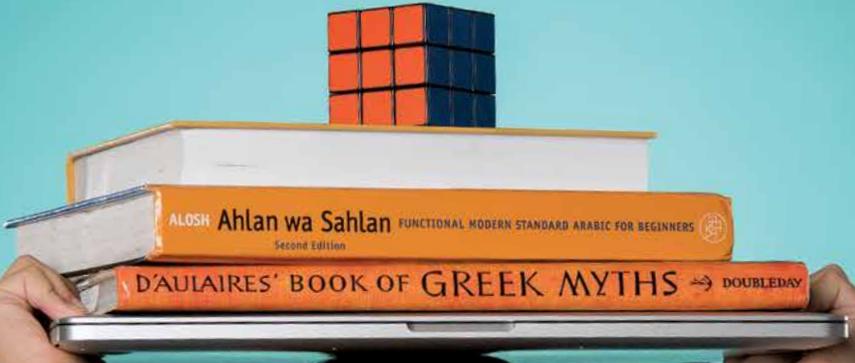
Welcome to CTY Online Programs

The Johns Hopkins Center for Talented Youth knows bright kids. We reach nearly 20,000 pre-college students from around the world each year through our summer, online, and family programs— and we know how to keep them excited about learning.

With CTY Online Programs, students can simply log in and access CTY's world-renowned courses, expert instructors, and engaging curriculum wherever they are. We offer a variety of courses including math enrichment, AP science, Chinese, grammar, critical reading, computer science, and writing. Courses are offered in session-based, individually paced, or flexi-paced formats for added convenience. Financial aid is available. CTY is accredited, which is important for students seeking credit or placement at school. Please note: students must establish eligibility for CTY online courses by achieving qualifying scores on one of our designated assessments.

Each bright student is unique—but they all share a curiosity and quest for knowledge that endures long after the school day ends.

Our online programs will help students dig deeper, challenge themselves further, and learn about the world at a pace that fits their schedule and individual learning goals. There are so many possibilities to explore. Read on to learn about the online courses we offer and start planning your year with CTY.

Visit cty.jhu.edu/ctyonline for details.

COMPUTER SCIENCE AND TECHNOLOGY

CTY's online computer science and technology courses are for students in elementary through high school and range from Scratch programming to advanced Java concepts to AP Computer Science. These engaging, challenging courses are designed to teach creative problem solving and programming skills. Textbook and materials purchase is required for some courses.

COURSES INCLUDE:

INTRODUCTION TO COMPUTER SCIENCE AND ENGINEERING
Prerequisite: Qualifying math score, completion of grade 2
Format: Session-based   **Course length:** 10 weeks

Students in this course learn such engineering concepts as the scientific method, electricity, and circuits, and basic computer programming concepts including statements, loops, and if-then logic.

SCRATCH PROGRAMMING FOR ELEMENTARY SCHOOL STUDENTS
Prerequisite: Qualifying math score, completion of grade 2
Format: Individually paced   **Course length:** Typically 3 months

Students are introduced to fundamental programming concepts, and learn how to create animations, computer games, and projects using the Scratch programming language.

INTRODUCTION TO WEB DESIGN
Prerequisite: Qualifying math or verbal score, completion of grade 5
Format: Individually paced   **Course length:** Typically 3 months

This course introduces students to basic web design using HTML and CSS. Students plan, design, and create their own functional website incorporating graphics, images, and multimedia.

INTRODUCTION TO JAVA
Prerequisite: Qualifying math score, completion of grade 8
Format: Individually paced   **Course length:** Typically 3 months

Students in this high school course learn about the Java programming language, including Java primitive and non-primitive data types, control flow constructs, and built-in class libraries.

ADVANCED SCRATCH PROGRAMMING
Prerequisite: See web for details
Format: Individually paced   **Course length:** Typically 3 months

Building on a foundation of Scratch fundamentals, this course teaches students how to create intricate games with Scratch using complex logic and program design.

OTHER COURSES INCLUDE:
Scratch Programming for Middle School Students, Advanced Web Design, JavaScript, Advanced Java Programming, and AP Computer Science A.
Visit cty.jhu.edu/ctyonline for details.

HUMANITIES

Humanities courses offer students in grades 2 through 12 the opportunity to explore how people process and document the human experience through critical reading, English language development, writing, grammar, visual fluency, and the study of the Arabic, Chinese, and Spanish languages.

Critical Reading

Open to students in grades 2 through 9, these courses enhance critical reading, thinking, and writing skills through the use of engaging texts, individualized written instructor feedback, and online discussions with peers. Students learn literary terms and advanced vocabulary in these session-based courses. Classes are not live; work is posted in virtual classrooms at the student's convenience as deadlines are met. Textbook purchase is required for most courses.

COURSES INCLUDE:

YOUNG READERS' SERIES: WILD THINGS
Prerequisites: Qualifying verbal or math score, open to students in grades 2 and 3
Format: Session-based   **Course length:** 5-12 weeks, depending on session
Four fiction and nonfiction works inspire students to learn about wild life and animal communication, engage in discussion forums, write articles and stories, and master web tools.

YOUNG READERS' SERIES: GREEK MYTHS REVISITED
Prerequisites: Qualifying verbal score, open to students in grades 4-6
Format: Session-based   **Course length:** 5-12 weeks, depending on session
Students take part in written discussions and create stories, interviews, and literary raps as they read classic myths and modern novels involving teens interacting with ancient Greek gods.

YOUNG READERS' SERIES: IN SEARCH OF
Prerequisites: Qualifying verbal or math score, open to students in grades 4-6
Format: Session-based   **Course length:** 5-12 weeks, depending on session
Students participate in discussion forums about topics including time travel and Amelia Earhart, learn web tools, and write from the perspectives of literary characters and imaginary talk show hosts.

ART MEETS SCIENCE: LITERATURE
Prerequisites: Qualifying verbal score, open to students in grades 6-9
Format: Session-based   **Course length:** 5-12 weeks, depending on session
Readings inspired by science provide models for students to create their own poems, stories, and essays, take part in discussion forums, and engage constructively in writing workshops.

YOUNG ADULT READERS' SERIES: MONSTERS, MAGIC, AND MAYHEM
Prerequisites: Qualifying verbal or math score, open to students in grades 7-9
Format: Session-based **Course length:** 5-12 weeks, depending on session

Four novels about teens confronting monsters and magic encourage students to participate in discussion forums; write narrative, persuasive, and descriptive essays; and master web tools.

OTHER COURSES INCLUDE:
Young Readers' Series for Grades 2 and 3: Dragon Tales, Good Dogs, Mystery Stories, Robot Encounters; Young Readers' Series for Grades 4-6: Ancient Egypt Rediscovered, Magical Life Lessons, Quests and Challenges, The Right Stuff; Young Adult Readers' Series: Dangerous Games and Rebellions; and Art Meets Science Series: Nonfiction.

English Language Development

English language development courses are challenging, above-grade-level courses for students in grades 3 and up. These courses are designed for native and non-native English speakers who seek to enhance their English speaking and writing skills in science, engineering, technology, and math. Textbook purchase is required. See web for details.

COURSES INCLUDE:

VOCABULARY, GRAMMAR, AND WRITING USING STEM
Prerequisites: Qualifying verbal or math score, open to students in grade 3 and up
Format: Session-based **Course length:** 12 weeks

In this series of courses, interactive lessons give students opportunities to take risks and have fun while improving their English and STEM grammar, reading, composition, and essay writing skills.

ESSAY WRITING USING STEM
Prerequisites: See web for details, open to students in grade 4 and up
Format: Session-based **Course length:** 12 weeks

In this course, students with advanced English conversation and writing skills strengthen their English STEM vocabulary for academic writing through reading, vocabulary development, and effective essay writing.

CRAFTING THE ESSAY FOR ENGLISH LANGUAGE LEARNERS
Prerequisites: Qualifying verbal score, open to students in grades 7-9
Format: Session-based **Course length:** 30 weeks

This course uses the same curriculum as our popular writing course Crafting the Essay and uses the personal essay to explore narration, description, and reflection, with a special focus on grammar and other specific English-language learning needs.

"I encourage my students to learn the language and the culture side-by-side; I think this gives them a wider perspective of the world, and in turn, makes each of them a better person."

Thana Jarjour-Moussa,
CTY Arabic Instructor

World Languages

CTY offers online world language courses in Arabic, Chinese, and Spanish to students in grades 2-12 at basic, intermediate, and advanced levels. These real-time, session-based courses in a virtual classroom feature interaction with an expert instructor and teaching assistant, as well as classmates. Readers' workshops and AP courses are also available. Software and textbooks are required and placement tests are available.

COURSES INCLUDE:

ARABIC

Arabic for Elementary School Students (Basic and Intermediate)
Arabic Language (Basic, Intermediate, Advanced)
Arabic Readers' Workshop (Basic, Intermediate, Advanced)

CHINESE

Chinese for Elementary School Students (Basic, Intermediate, Advanced)
Chinese Language (Basic, Intermediate, Advanced)
Chinese Readers' Workshop (Basic, Intermediate, Advanced)
Chinese Essay Writing
AP Chinese Language and Culture

SPANISH

Spanish Language for Elementary Students (Basic, Intermediate, Advanced)
Spanish Language (Basic, Intermediate, Advanced)
Spanish Readers' Workshop (Basic, Intermediate, Advanced)
Spanish Literature Readers' Workshop (Basic, Intermediate, Advanced)
Spanish Language Essay Writing
AP Spanish Language and Culture
AP Spanish Literature and Culture

All CTY Online Programs AP courses are approved by the College Board.
Visit cty.jhu.edu/ctyonline for details.

"I like that if I went to a country where people speak Arabic, I could fit in and be able to talk to people and get to know them and learn about them."

Ruth B., *Arabic Language Student*

CTY offers an environment that enables students with special skills to thrive, and it offers a network of peers and alumni that are very valuable to one another long-term."

Don Nelson, *Parent*

Writing, Grammar, and Visual Fluency

CTY's online writing courses for students in grades 5-12 give students the chance to work with professional writers and explore creative and academic writing, all the way up to AP English Language and Composition. Many writing courses are offered in session-based or flexi-paced format and, as a result, course length varies. Our web-based grammar courses help students in elementary, middle, and high school learn and practice the rules of grammar and usage and better understand how their grammatical choices can affect the quality of their prose. CTY's session-based visual fluency courses incorporate principles of communication theory, design theory, and cognitive psychology to understand principals of effective visual communication. See web for details.

COURSES INCLUDE:

THE PROCESS OF WRITING
Prerequisites: Qualifying verbal score, open to grades 5-6
Format: Session-based, email or flexi-paced   **Course length:** See web for details
This course demystifies the writing process and helps students develop the confidence to challenge themselves and take risks. Students write autobiographical sketches, poems, and nonfiction and fiction narratives and improve their writing by prewriting, drafting, and revising their work.

CRAFTING THE ESSAY
Prerequisites: Qualifying verbal score, open to students in grades 7-9
Format: Session-based, email, web, or flexi-paced   **Course length:** See web for details
This popular writing course uses the personal essay to explore narration, description, and reflection. By the end of this course students should be able to use the writing process to generate elegantly crafted works.

AP ENGLISH LANGUAGE AND COMPOSITION
Prerequisites: See web for details
Format: Session-based   **Course length:** 12-30 weeks, depending on session
This College Board-approved course prepares students to take the AP English Language and Composition exam and provides training in analysis of literary nonfiction as well as analytical and persuasive writing.

FROM STRUCTURE TO STYLE

Prerequisites: Qualifying verbal score, open to students in grades 7-12

Format: Session-based   **Course length**: 5-12 weeks, depending on session

Students in this grammar course examine the rules of Standard Written English and adapt them to develop a personal style as they show their ability to experiment with writing.

GRAMMAR FUNDAMENTALS

Prerequisites: Qualifying verbal or math score, open to students in grades 5-6

Format: Session-based   **Course length:** 10-12 weeks, depending on session

This grammar course teaches students the fine points of grammar and helps them practice their skills through games and writing assignments, guided by their expert instructor.

VISUAL COMMUNICATION

Prerequisites: Qualifying verbal score, open to students in grades 7-12

Format: Session-based   **Course length:** 5-12 weeks, depending on session

Students in this visual fluency course explore elements of design in visual communication, visual methods of story planning, and the components of effective visual communication.

OTHER COURSES INCLUDE:

Writing for an Audience, Writing Analysis and Persuasion, Crafting Poetry, Crafting Fiction, Building Blocks, and Visual Literacy. **Visit cty.jhu.edu/ctyonline for details.**

Please see Social Science and History courses for additional humanities offerings.

"In school, my son goes to school, and he has homework. With his CTY course, he has class, homework, Skype lessons, studies for tests with flashcards, and has a midterm and a final, so he's had to maintain good study habits. This has been a good training ground for academic study later on."

Faisal Siddiqui, *Parent*

"I feel like a lot of students tend to slack off during the summer; this course kept me fresh and ready to take on the school year."

Kameron N., *Honors Algebra II Student*

MATHEMATICS

CTY's online mathematics courses span elementary through college-level curriculum and cover a wide range of topics, from algebra and geometry, to chess and cryptography, to AP Calculus. All math courses are offered in the individually paced format and are guided by expert instructors. Prerequisites vary and textbook purchase may be required. See website for details.

Mathematics Enrichment and Problem Solving

CTY's math-enrichment courses engage elementary and middle school students in mathematical and algorithmic thinking through games and exercises that emphasize problem solving, creative thinking, and applications to real-world problems. Our problem-solving math courses sharpen investigativeskills, broaden mathematical understanding of concepts, and enhance reasoning skills.

COURSES INCLUDE:

CRYPTOGRAPHY: MATH AND CODES
Prerequisites: Qualifying math score, completion of grade 3 math
Format: Individually paced   **Course length:** Typically 3 months

In this course, students apply mathematical concepts such as data analysis, probability, and factorization to make and break secret codes.

INTRODUCTION TO CHESS
Prerequisites: Qualifying math or verbal score, open to students in grade 3 and up
Format: Individually paced   **Course length:** Typically 3 months

This course provides new players with a strong foundation in the rules and strategies of chess. Students develop skills in concentration, logic, decision-making, planning, and self-discipline.

PROBLEM SOLVING IN PRE-ALGEBRA
Prerequisites: See web for details
Format: Individually paced   **Course length:** Typically 3 months

In this course, students who understand pre-algebraic concepts and wish to enrich their skills are prepared for a more formal study of middle school mathematics through applications and real-world examples.

OTHER COURSES INCLUDE:
Problem Solving in Arithmetic, Problem Solving in Algebra, and Problem Solving in Geometry. **Visit cty.jhu.edu/ctyonline for details.**

Honors Mathematics

CTY's honors mathematics courses extend from Honors Grade 4 Mathematics through Honors Precalculus and incorporate challenging coursework with dynamic explanations that use animations, videos, and real-time feedback. In these individually paced courses, which typically take six months to complete, students use online tools to expand their knowledge and explore mathematical ideas with their instructor through theory and applications.

COURSES INCLUDE:

Honors Grade 4 Mathematics
Honors Grade 5 Mathematics
Honors Pre-algebra
Honors Algebra I
Honors Algebra II
Honors Geometry
Honors Trigonometry
Honors Precalculus

Visit cty.jhu.edu/ctyonline for details.

Competitive Mathematics

CTY's competitive mathematics series includes individually paced courses that help prepare elementary, middle, and high school students for success in state, national, and international mathematics competitions, including MATHCOUNTS®, American Mathematics Competition, and the American Invitational Mathematics Examination.

COURSES INCLUDE:

Math Olympiad for Elementary School Students
MATHCOUNTS® Prep
MATHCOUNTS®
Competitive Mathematics Prep
Competitive Mathematics I
Competitive Mathematics II

Visit cty.jhu.edu/ctyonline for details.

Advanced Placement Mathematics

CTY's online AP math courses cover a full academic year of work and are comparable to similar courses offered in colleges and universities. After completing any of these individually paced courses, which typically take six months, students will be prepared to take the corresponding AP exam to seek

college credit or placement. CTY's online AP math courses can replace or supplement a standard, non-AP course in calculus or statistics.

COURSES INCLUDE:

AP Calculus AB

AP Calculus BC

AP Statistics

All CTY Online Programs AP courses are approved by the College Board. **Visit cty.jhu.edu/ctyonline for details.**

College Mathematics

CTY's online college math courses are based on Johns Hopkins University's undergraduate mathematics curriculum. These courses do not earn college credit from Johns Hopkins, but may be used to fulfill a student's high school math requirement or determine college placement. All CTY online college mathematics courses are individually paced, typically last about six months, are textbook-based, and require a textbook purchase.

COURSES INCLUDE:

LINEAR ALGEBRA

Prerequisites: See web for details

Format: Individually paced   **Course length:** Typically 6 months

In this course, students learn the main concepts and terminology of linear algebra by studying topics such as matrices, determinants, eigenvalues and eigenvectors, and vector spaces. This course is equivalent to a college linear algebra course.

MULTIVARIABLE CALCULUS

Prerequisites: See web for details

Format: Individually paced   **Course length:** Typically 6 months

Students in this course learn the main concepts and computational tools of higher-dimensional calculus. Topics covered include functions of more than one variable, partial derivatives and applications; multiple integrals, line and surface integrals; Green's Theorem, Stokes' Theorem, and Gauss' Divergence Theorem. This course is equivalent to JHU's Calculus III course.

INTRODUCTION TO ABSTRACT MATHEMATICS

Prerequisites: See web for details

Format: Individually paced   **Course length:** Typically 6 months

In this course, students learn how to construct logical arguments in the form of a proof to verify mathematical statements. Topics include elementary set theory, functions, integers, fields, complex numbers, and polynomials.

OTHER COURSES INCLUDE:

Differential Equations, Introduction to Real Analysis, and Introduction to Complex Analysis. **Visit cty.jhu.edu/ctyonline for details.**

"He's pretty driven on his own and he really likes physics—our biggest challenge has been finding people who believe he's capable of doing this level of work. His instructor was enthusiastic, and able to translate challenging concepts into a language the kids could understand."

Eric Hesterman,
Parent

SCIENCE AND ENGINEERING

CTY's online science and engineering courses help bring science to life for students of all ages—from introducing elementary school students to topics not covered in a standard science curriculum to building science knowledge and reinforcing concepts in middle school students, to helping high schoolers master complex scientific concepts and prepare them for Advanced Placement exams. Many courses include either projects or a lab component and may require purchase of a lab kit or additional materials and a textbook.

COURSES INCLUDE:

INVENTIONS IN ENGINEERING
Prerequisites: Qualifying math score, open to students in grades 3-5
Format: Session-based   **Course length:** 12 weeks

This course provides young students with an introduction to inventors and inventions and fosters problem solving and creativity. Students learn about the history of engineering and inventions, the scientific process, and fundamentals of engineering, and are prepared to complete independent projects central to the course.

INTRODUCTION TO FORENSICS
Prerequisites: Qualifying math or verbal score, open to students in grades 6-9
Format: Session-based   **Course length:** 12 weeks

Students learn science, math, and writing skills through hands-on applications, web-based activities, and by reading scientific articles and case studies that teach them how to process and examine physical evidence. This course also teaches how to use deductive reasoning and problem-solving in a scientific investigation.

PHYSICAL SCIENCE
Prerequisites: Qualifying math score, completion of grade 5 math
Format: Individually paced   **Course length:** Typically 3 months

This course provides students with an introduction to the fundamentals of chemistry and physics. Topics include properties and structures of matter, the periodic table of elements, chemical reactions, and Newton's Laws.

LIFE SCIENCE
Prerequisites: Qualifying math score, completion of grade 5 math
Format: Individually paced   **Course length:** Typically 3 months
Students in this course explore the development, classification, and interaction among organisms. Topics include cells, the structure and function of organelles, genetics and heredity, and evolution.

HONORS BIOLOGY

Prerequisites: See web for details
Format: Individually paced   **Course length:** Typically 6 months
This course covers material typically included in a high school biology course and prepares students to take AP Biology. Students study the structures, functions, and processes of living organisms and their interactions with the environment.

OTHER COURSES INCLUDE:

Earth and Space Science, Honors Chemistry, and Honors Physics.
Visit cty.jhu.edu/ctyonline for details.

AP Science

CTY's online AP science courses are designed to extend students' knowledge of scientific concepts beyond the high school level and cover material typically found in an introductory college-level course. Lab experiences give students opportunities to apply their knowledge of the material to real-life situations. These session-based courses prepare students to take the corresponding AP exam to seek college credit, college placement, or both.

COURSES INCLUDE:

AP Biology
AP Chemistry
AP Physics 1
AP Physics 2

All CTY Online Programs AP courses are approved by the College Board.
Visit cty.jhu.edu/ctyonline for details.

"There was one project where we built a towerwith gumdrops and uncooked spaghetti. I liked that we learned by trial and error; it was more fun because you could try many different designs; not just try one thing and that's it."

Wyatt H, *Inventions in Engineering Student*

"Gifted students tend to think outside the box, and in an online classroom, they have more freedom to do that and don't feel like they'll be judged."

Keli Walls, *CTY Online Science Program Manager*

SOCIAL SCIENCES AND HISTORY

CTY offers rigorous online, session-based AP courses in economics, U.S. history and government, and psychology. These courses cover college-level material and prepare students to take the corresponding AP exam to seek college credit, college placement, or both.

COURSES INCLUDE:

AP Macroeconomics

AP Microeconomics

AP Psychology

AP United States Government and Politics

AP United States History

All CTY Online Programs AP courses are approved by the College Board.
Visit cty.jhu.edu/ctyonline for details.

More about CTY Online Programs

CHOOSING COURSES
CTY's online courses are designed to enrich and accelerate students in areas where they show the strongest abilities. The appropriate course depends on a student's previous educational background, not necessarily age or grade. Visit our website for prerequisites and eligibility requirements for each course, and information about placement tests.

ENROLLING
Students establish eligibility for CTY's online courses by achieving qualifying scores on one of our designated assessments. Students may enroll at any time for individually paced math, computer science, and science courses and begin their courses shortly thereafter. Visit cty.jhu.edu/ctyonline/calendar for enrollment deadlines for session-based courses in writing, critical reading, world languages, and more.

TUITION
Tuition ranges from $360 to $2,125, based on length and type of course selected, and is subject to change. Visit cty.jhu.edu/ctyonline/tuition for information about tuition, fees, and our refund policy.

AFFORDING CTY
CTY is committed to making our programs available to qualified students and offers need-based financial aid to families of limited financial means. Visit cty.jhu.edu/financial for details.

TEXTBOOKS AND TECHNICAL REQUIREMENTS
Many courses list specific technical requirements. Some courses may require the purchase of textbooks or other materials. Review individual course descriptions at cty.jhu.edu/ctyonline/courses for details.

ACCOMMODATIONS FOR STUDENTS
CTY is committed to providing reasonable, appropriate, and necessary accommodations for qualified students with disabilities. Visit cty.jhu.edu/disability/accommodations/ctyonline.html for more information.

ACCREDITATION
CTY is accredited for students in grades K through 12 by the Middle States Association of Colleges and Schools. All CTY Online Programs AP courses are approved by the College Board and select courses are approved by the NCAA and University of California. See cty.jhu.edu/ctyonline/about/credit.html for details.

CREDIT AND PLACEMENT
We recommend that families who wish to seek credit or placement from their child's school for their CTY online course begin this process with their school before enrolling in the course. Visit cty.jhu.edu/ctyonline/about/credit.html for more information.

CONNECT WITH CTY.

**We know you still have questions.
Join us at cty.jhu.edu to learn more about CTY or connect
with us through our social media channels.**

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CTY Online Programs?
Reach us at ctyonline@jhu.edu
or 410-735-6166.

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