CVA Honors Geometry Syllabus

Class Description

This course is designed as the second course in a three-course series. This course enhances students' geometric, algebraic, graphical, and probabilistic reasoning skills. Students will apply their algebraic and geometric reasoning skills to make sense of problems involving geometry, trigonometry, algebra, probability, and statistics. Students will continue to enhance their analytical geometry and reasoning skills when analyzing and applying a deep understanding of polynomial expressions, proofs, constructions, rigid motions and transformations, similarity, congruence, circles, right triangle trigonometry, geometric measurement, and conditional probability.

This course has three sections: Honors Geometry A is the first half of the class and includes Units 1-4. Honors Geometry B is the second half of the class and includes Units 5-8. Honors Geometry Y is the entire class and includes Units 1-8.

Students taking the **Honors** course will study topics that increase the depth and scope of their study of the concepts of Geometry.

Click HERE for the Honors Geometry Y Class Schedule which outlines the Units, Lessons, and Assessments for this course.

Click HERE for the Geometry State standards.

Class Outline

Unit 1: Exploring Polynomial Expressions through Geometry

This unit develops the structural similarities between the system of polynomials and the system of integers. Students draw on analogies between polynomial arithmetic and base–ten computations, focusing on properties of operations, particularly the distributive property through geometry contexts. Students connect multiplication of polynomials with multiplication of multi–digit integers through geometric contexts.

Unit 2: Geometric Foundations, Constructions, and Proofs
In this unit, we will revisit earlier studies in elementary, middle grades, and high school by formally exploring the geometric notions of point, line, plane and distance around a circular arc to aid in the development of precise definitions. Students will make geometric constructions to support their understanding of congruence and apply reasoning skills to explain why the constructions work. Students will use their understandings from Algebra to classify quadrilaterals by proving geometric theorems algebraically. Students will use these foundations of geometry to construct arguments and solve geometric problems to model and explain real-life phenomena.

Unit 3: Exploring Congruence

In this unit, students will be introduced to transformations in the coordinate plane, describe a sequence of transformations that will map one figure onto another, and describe transformations that will map a figure onto itself. Students will use rigid motion transformations to develop an understanding of congruence and use this to prove theorems involving triangles.

Unit 4: Investigating Similarity

In this unit, students will explore nonrigid transformations and proportional reasoning to develop a formal understanding of similarity. Students will use the definition of dilation to describe similarity and the criterion for triangles to be similar. Similarity transformations (rigid motions followed by dilations) define similarity in the same way that rigid motions define congruence. These transformations lead to the criterion for triangle similarity that two pairs of corresponding angles are congruent. Students will use this to prove similarity involving triangles.

Unit 5: Right Triangle Trigonometry

In this unit, students will explore right triangle trigonometry in geometric contexts. Students will use concepts of similarity, from Unit 4, to develop relationships in right triangles to understand right triangle trigonometry, using sine, cosine, and tangent. Students will investigate the relationships between the sine and cosine of complementary angles and use them to solve problems. Students will use the trigonometric ratios and the Pythagorean Theorem to solve application problems involving right triangles to find missing sides and angles.

Unit 6: Making Sense of Circles

In this unit, students will examine and apply theorems involving circles and explore the concept of radian measure and special right triangles. Students will examine and apply theorems involving angle relationships formed by chords, secants, tangents, and radii of circles. Students will use similarity to derive the length of an arc is proportional to the radius and derive the area of sectors of circles. Students will graph and write equations of circles in standard form. Students will extend their understanding of arc length in circles and begin exploring angles within the unit circle as a fraction of the circumference all the way around the unit circle. They will fluently convert between degrees and radians. Students will use special right triangles concepts to define the value of the sine, cosine, and tangent and understand the x (cosine), y (sine), and r (1) values of each angle measure found at all terminal angles that are multiples of 30° ($\pi/6$), 45° ($\pi/4$) and 60° ($\pi/3$) around the unit circle, and will be able to find the sine, cosine, and tangent at all of these radian measures, as well.

Unit 7: Modeling with Equations and Measurement

In this unit, students will explore equations and measurement in geometric contexts as models for real-life phenomena developing informal arguments and solving problems involving volume.

Unit 8: Investigating Probability and Statistics

In this unit, students will calculate, model, and interpret probabilities of compound events. Students will calculate permutations and combinations within real-world contexts and develop probability distributions based on the entire sample space. Students will calculate the expected value of a probability distribution and understand it to be the mean of that probability distribution.

Using expected value, students will make decisions about risk vs. reward in real-world situations such as games of chance and insurance. Students will organize real-life data in two-way frequency tables. They will explore two-way frequency tables to develop an understanding of probabilities for unions and intersections. Students will use the two-way frequency tables to find probabilities.

CVA Work Policy

- All classwork must be completed and submitted using the links in CTLS by the DUE DATE listed on the Class Schedule.
- Work should be completed in the order it is assigned on the Class Schedule.
- All work submitted on time will be graded within 48 hours.
- Assignments not submitted by the due date will be marked missing. Missing assignments are calculated as zeros in the coursework average. When students submit missing work, the assignment will be graded and calculated into the coursework average.

The CVA term ends prior to the end of the traditional school semester. The final date work will be accepted each term is posted on the CVA website (cobbvirtualacademy.org) and the Class Schedule.

Grading

Grades for this course are calculated based on category percentages as follows:

Category	Weight
Assessments	20%
Application Activities	30%
Tests	40%
Final Exam	10%

CVA Exemption Incentive

To qualify for CVA's exemption incentive and exempt the Final Exam/lowest unit test or major assessment grade, CVA students must:

- Submit ALL assignments on OR before the due date
- Have an 85% coursework average or higher before the final exam
- Have no more than one academic integrity violation

Academic Integrity

Academic integrity is the cornerstone of learning at CVA and we take the integrity and authenticity of student work very seriously. When academic integrity is maintained, students will make decisions based on values that will prepare them to be productive, meaningful, and ethical citizens.

Students are required to abide by the CVA Academic Integrity Policy. Academic dishonesty in any form will not be tolerated. The CVA Academic Integrity Policy outlines the consequences if

students fail to maintain academic integrity in their course. For additional information, the CVA Academic Integrity Policy is posted on the CVA website.

Consequence	Occurrence			
	1st	2nd	3rd	4th
Parent contact by teacher	✓	✓	✓	✓
Resubmit work for full credit	✓			
Resubmit work for half credit		✓		
Automatic Zero			✓	✓
Parent contact by CVA Administration			✓	✓
Mandated proctored exam or course work				✓
Local school is notified of Academic Integrity violation		✓	✓	✓
Other as designated by CVA or local school administration	✓	✓	✓	✓

General Information

- The Cobb Teaching and Learning System (CTLS) is the platform used to deliver Cobb Virtual Academy classes.
- Students must earn 100% on the Student Orientation Quiz located inside each CVA Digital Classroom before they begin their Student Coursework.
- All coursework must be submitted through CTLS.
- All CCSD students have access to Microsoft 365 applications and must submit assignments in the requested format.
- Students in all sections of this course will take an online final exam during the window of time published on the CVA website and the Class Schedule.

Course Specific Information

- Assessments and Application Activities: After reviewing each lesson, students will complete an assessment and/or an application activity online. Each assessment has approximately 10-15 questions. The application activity has free-response questions.
- Tests: Students should carefully review the feedback on graded items and be sure to understand the material prior to beginning the Unit Test.

Technology Requirements

CTLS is geo-restricted to the United States.

- A modern PC or Mac Computer
    - Lightweight or mobile devices such as Chromebooks, iPads, Android tablets, or smartphones **may not** be compatible with many of our courses.
    - Windows or Mac based computer
- Access to Microsoft 365
- Internet access

CVA Expectations

Student

- Maintain consistent access to a computer and internet
- Login to the course daily and review the announcements
- Adhere to the deadlines listed on the Class Schedule
- Read and promptly respond to teacher communication
- Contact the teacher with questions
- Manage your time wisely

Teacher

- Welcome Phone Call in the first two weeks
- 24 – 48-hour turnaround on all communication
- 24 – 48-hour turnaround on grading for items submitted by the due date
- Provide relevant feedback on assignments
- Be accessible via email and phone or text during published hours
- Provide two or more live sessions per term

Remind

CVA students and parents are automatically enrolled in their CVA teacher's Remind class based on the phone numbers provided during registration. If a parent and student provide the same cell phone number, they will not sync to Remind and will have to join the class manually using the join code posted on the Teacher Information page of their course.

Student Support

A student's first source for support is their CVA teacher. However, additional support is available. The **CVA Learning Center** is staffed with facilitators and is available both **in person** and **virtually**.

Facilitators can assist students with getting started, class navigation, assignment instructions, submitting work, technical issues, and strategies for online success.

The in-person Learning Center is on the Cobb Horizon High School campus at 1765 The Exchange Atlanta, GA.

All CVA students are enrolled in the Student Support digital classroom which provides access to the Virtual Learning Center (VLC). Students use the CTLS chat feature to send a message to the Student Support Team during the hours it is open.

Live Sessions

Your teacher will post live session information to the Class Board.