

Spectrum Program Session 1 Course Title: Geometry Honors

Course Description

Geometry Honors is an instructor-led course in two- and three-dimensional geometry. Topics include formal proofs, logic and deductive reasoning, constructions, congruence and similarity, parallels and perpendiculars, polygons and circles, transformations and problem solving using advanced technology.

Essential Questions

How does geometry relate to real world applications?

What logical explanation can we formulate for different proofs and applications?

Outcomes

Upon successful completion of this course, students will:

- Know geometric definitions, postulates, axioms, and theorems.
- Understand complex problems involving circles, polygons, and three-dimensional figures.
- Apply geometric postulates, definitions, and concepts to solve complex problems, including real-world applications.
- Use logic and reasoning abilities to solve advanced Geometric proofs.

Instructional Strategies

The Mathematics Program of the Center for Talent Development Summer Program provides a curriculum and instructional methodology that allows students to master as much mathematics as possible in three weeks. Students will work independently and in groups to participate in enrichment activities. Courses are three weeks long, with five hours of in-class work for five days a week (75 hours total class time). Daily outside homework is required. Proficiency and thorough understanding of material are major concerns of this course. Students work through honors level material and are expected to score at least 70% on chapter tests before they move on to a new topic. Students diagnosed as having incomplete proficiency in specific areas continue working on those areas with individualized instruction until they demonstrate proficiency.

Resources and Materials

- **Books**
McDougal, Littell, Geometry for Enjoyment and Challenge, 2000, 1996, 1991 978-0-866-09965-3
- **Materials**
Graphing Calculator

Student Assessment

- **Pre-Assessment**

A standardized exam that students will be given to determine, with the assistance of the instructor, which material can be skipped, compacted, or simply reviewed.

- **CTD Grading Scale**

A+	100-97%	A	96-93%	A-	92-90%
B+	89-87%	B	86-83%	B-	82-80%
C+	79-77%	C	76-73%	C-	72-70%
D+	69-67%	D	66-63%	D-	62-60%
F	below 60%				

- **Breakdown of Final Grade**

10% Homework, 70% Chapter tests, 20% Semester Exams

- **Post-Assessment**

A standardized exam that students will be given to determine, with the assistance of the instructor, which material can be skipped, compacted, or simply reviewed.

Schedule

Date	Topic(s)	In-class Activities	Assignments/Assessments
6/27	Ch. 1 Introduction to Geometry – Investigate the Building blocks of geometry including relationships with points, lines, segments, and angles.	Lecture Chapter 1 Homework	Pre-test
6/28	Ch. 2 Basic Concepts and Proofs – Using inductive reasoning skills as well as formal and informal reasoning processes to reach and justify conclusions.	Lecture Inductive Reasoning activity Chapter 2 Homework	Chapter 1 Test
6/29	Ch. 3 Congruent Triangles – Classify triangles, apply theorems about triangles, and prove triangles congruent.	Partner work Individual proof activity Geometers Sketchpad Chapter 3 Homework	Chapter 2 Test
6/30	Ch. 4 Lines in Planes – Solve problems and complete proofs about lines and transversals. Identify angle relationships that occur with lines cut by a transversal and will identify parallel lines.	Lecture Group Work with proofs Chapter 4 Homework	Chapter 3 Test
7/1	Ch. 5 Parallel Lines and Related Figures – Classify quadrilaterals and analyze relationships among quadrilaterals to solve problems and write proofs.	Partner work Geometers Sketchpad activity Chapter 5 Homework	Chapter 4 Test
7/4	Ch. 6 Lines and Planes in Space – Recognize planes and their relationship to points and lines.	Individual Proof Activity Chapter 6 Homework	Chapter 5 Test
7/5	Review of Semester 1	Review activity Row review game Review Homework Assignment	Chapter 6 Test
7/6	Ch. 7 Polygons – Identify and classify polygons and analyze relationships among polygons to solve problems.	Lecture Partner work Chapter 7 Homework	Semester 1 Exam

Date	Topic(s)	In-class Activities	Assignments/Assessments
7/7	Ch. 8 Similar Polygons – Apply the concepts of similarity to identify similar figures, prove figures similar, and solve practical real world applications.	Lecture Real life similarity Chapter 8 Homework	Chapter 7 Test
7/8	Ch. 9 The Pythagorean Theorem – Describe relationships in right triangles including special right triangles and trigonometric ratios, solve triangles, and apply these concepts to practical real world applications.	Derive Pythagorean Theorem Right triangle trig real world applications Chapter 9 Homework	Chapter 8 Test
7/11	Ch. 10 Circles – Identify parts of circles, examine geometric relationships involving circles and apply relationships to problems.	Partner work Lecture Chapter 10 Homework	Chapter 9 Test
7/12	Ch. 11 Area – Find the area of polygons and circles and apply these skills to practical applications.	Discover area formulas Chapter 11 Homework	Chapter 10 Test
7/13	Ch. 12 Surface Area and Volume – Identify three-dimensional figures and find their surface area and volumes.	Group work Lecture Chapter 12 Homework	Chapter 11 Test
7/14	Review of Semester 2	Review activity Row review game	Chapter 12 Test
7/15	Final Exams Afternoon Conferences		Semester 2 Exam

CTD Statement on Third-Party Web Sites

Instructors are required to thoroughly review any third-party web sites they intend to use in their courses for inappropriate content. However, because web content continuously changes, CTD disclaims any responsibility for any of the content contained on third-party web sites used in course materials. If you become aware of anything that may be inappropriate, please notify CTD staff immediately.