

# Perris Union High School District

## Course of Study

### A. COURSE INFORMATION

<b>Course Title:</b> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Geometry Essentials</div> <input checked="" type="checkbox"/> New <input type="checkbox"/> Revised	<b>Subject Area:</b> <input type="checkbox"/> Social Science <input type="checkbox"/> English <input checked="" type="checkbox"/> Mathematics <input type="checkbox"/> Laboratory Science <input type="checkbox"/> World Languages <input type="checkbox"/> Visual or Performing Arts <input type="checkbox"/> College Prep Elective <input type="checkbox"/> Other	<b>Grade Level</b> <input type="checkbox"/> MS <input type="checkbox"/> HS <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input checked="" type="checkbox"/> 9 <input checked="" type="checkbox"/> 10 <input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12
<b>If revised previous course name if changed</b> <div style="border: 1px solid black; height: 20px; width: 100%;"></div>	Is this classified as a Career Technical Education course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Transcript Course Code/Number:</b> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> (To be assigned by Educational Services)		
<b>Required for Graduation:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Credential Required to teach this course:</b> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Single Subject : Mathematics</div> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px; flex-grow: 1;"> <i>Stephane D. Altar</i>            Signature         </div> <div style="border: 1px solid black; padding: 2px; flex-grow: 1;">           3/25/2022            Date         </div> </div> <div style="margin-top: 5px;">           CalPADS CODE <span style="border: 1px solid black; padding: 2px 10px;">9255</span> </div> <p style="color: yellow; font-weight: bold; margin-top: 5px;">To be completed by Human Resources only.</p>	
<b>Meets UC/CSU Requirements?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>Was this course <u>previously approved by UC</u> for PUHSD?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Will be verified by Ed Services)	<b>Meets "Honors" Requirements?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Meets "AP" Requirements?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Unit Value/Length of Course:</b> <input type="checkbox"/> 0.5 (half year or semester equivalent) <input checked="" type="checkbox"/> 1.0 (one year equivalent) <input type="checkbox"/> 2.0 (two year equivalent) <input type="checkbox"/> Other:	
<b>Submitted by: Julie Zierold</b> <b>Site: SSC</b> <b>Date: 03/18/2022</b>		
<b>Approvals</b>	<b>Name/Signature</b>	<b>Date</b>
Director of Curriculum & Instruction		3/25/22
Asst. Superintendent of Educational Services		3/26/22
Governing Board		

<b>Prerequisite(s) (REQUIRED):</b>
Successful completion of Algebra 1 Essentials
<b>Corequisite(s) (REQUIRED):</b>
None
<b>Brief Course Description (REQUIRED):</b>
The fundamental purpose of the Geometry Essentials course is to formalize and extend students' geometric experiences from the middle grades. This course includes standards from the conceptual categories of Geometry. In this Geometry Essential course, students explore more complex geometric situations and deepen their explanations of geometric relationships, presenting and hearing formal mathematical arguments. Important differences exist between this course and the historical approach taken in geometry classes. For the Geometry Essential course, instructional time should focus on the critical areas: (1) establish criteria for congruence of triangles based on rigid motions; (2) establish criteria for similarity of triangles; (3) informally develop explanations of circumference, area, and volume formulas; (4) apply the Pythagorean Theorem; and (5) prove basic geometric theorems.

<b>B. COURSE CONTENT</b>
<b>Course Purpose (REQUIRED):</b> <i>What is the purpose of this course? Please provide a brief description of the goals and expected outcomes. Note: More specificity than a simple recitation of the State Standards is needed.</i>
The fundamental purpose of the Geometry Essentials course is to formalize and extend students' geometric experiences from the middle grades. This course includes standards from the conceptual categories of Geometry. Some standards are repeated in multiple higher mathematics courses; therefore instructional notes, which appear in brackets, indicate what is appropriate for study in this particular course.  In this Geometry Essential course, students explore more complex geometric situations and deepen their explanations of geometric relationships, presenting and hearing formal mathematical arguments. For example, transformations are emphasized in this course.  For the Geometry Essentials course, instructional time should focus on six critical areas: (1) establish criteria for congruence of triangles based on rigid motions; (2) establish criteria for similarity of triangles; (3) informally develop explanations of circumference, area, and volume formulas; (4) apply the Pythagorean Theorem to the coordinate plane

and (5) prove basic geometric theorems

(1) Students have prior experience with drawing triangles based on given measurements and performing rigid motions including translations, reflections, and rotations. They have used these to develop notions about what it means for two objects to be congruent. They use triangle congruence as a familiar foundation for the development of formal proof. Students prove theorems—using a variety of formats including deductive and inductive reasoning and proof by contradiction—and solve problems about triangles, quadrilaterals, and other polygons.

(2) Students apply their earlier experience of proportional reasoning to build a formal understanding of similarity. They identify criteria for similarity of triangles, use similarity to solve problems, and apply similarity in right triangles to understand right triangle trigonometry, with particular attention to special right triangles and the Pythagorean Theorem.

(3) Students' experience with three-dimensional objects is extended to include informal explanations of circumference, area, and volume formulas. Additionally, students apply their knowledge of two-dimensional shapes to consider the shapes of cross-sections and the result of rotating a two-dimensional object about a line.

(4) Building on their work with the Pythagorean Theorem to find distances, properties of special triangles and quadrilaterals, and slopes of parallel and perpendicular lines, which relates back to work done in the Algebra I course.

The Standards for Mathematical Practice complement the content standards so that students increasingly engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle, and high school years.

**Course Outline (REQUIRED):**

*Detailed description of topics covered. All historical knowledge is expected to be empirically based, give examples. Show examples of how the text is incorporated into the topics covered.*

Students will learn:

- Algebra
  - Properties
    - In the transition from arithmetic to algebra, attention shifts from arithmetic operations to use of the properties of these operations.
    - All of the facts of arithmetic and algebra follow from certain properties.
  - Variable
    - Quantities are used to form expressions, equations and inequalities.
    - An expression refers to a quantity but does not make a statement about it/ An equation is a statement about the quantities it mentions.
    - Using variables in place of numbers in equations allows the statement of relationships among numbers that are unknown or unspecified.
  - Equivalence
    - A single quantity may be represented by many different expressions.
    - The facts about a quantity may be expressed by many different equations or inequalities.
  - Solving Equations and Inequalities
    - Solving an equation is the process of rewriting the equation to make what it says about its variable(s) as simple as possible.
    - Properties of numbers and equality can be used to transform an equation (or inequality) into

- equivalent, simpler equations (or inequalities) in order to find solutions.
- Useful information about equations and inequalities (including solutions) can be found by analyzing graphs or tables.
- The numbers and types of solutions vary predictably, based on the type of equation.
- Proportionality
  - Two quantities are proportional if they have the same ratio in each instance where they are measured together
  - Two quantities are inversely proportional if they have the same product in each instance where they are measured together.
- Modeling
  - Many real-world mathematical problems can be represented algebraically. These representations can lead to algebraic solutions.
  - A function that models a real-world situation can then be used to make estimates or predictions about future occurrences.
- Geometry
  - Visualization
    - Visualization can help you connect properties of real objects with two-dimensional drawings of these objects.
  - Transformations
    - Transformations are mathematical functions that model concrete operations with figures.
    - Transformations may be described geometrically or by coordinates.
    - Symmetries of figures may be defined and classified by transformations.
  - Measurement
    - Some attributes of geometric figures, such as length, area, volume, and angle measure, are measurable. Units are used to describe these attributes.
  - Reasoning and Proof
    - Definitions establish meaning and remove possible misunderstanding.
    - Other truths are more complex and difficult to see. It is often possible to verify complex truths by reasoning from simpler ones by using deductive reasoning.
  - Similarity
    - Two geometric figures are similar when corresponding lengths are proportional and corresponding angles are congruent.
    - Areas of similar figures are proportional to the squares of their corresponding lengths.
    - Volumes of similar figures are proportional to the cubes of their corresponding lengths.

**Writing Assignments (REQUIRED):**

*Give examples of the writing assignments and the use of critical analysis within the writing assignments.*

Writing assignments will include:

- Justifications and/or Explanations
- Cornell Notes
- Assessments
- Projects/Performance Tasks
- Journals/Learning Logs – Reflections/Summaries
- Writing Prompts
- Other CFUs (i.e. Warm ups and Tickets out the Door)

**INSTRUCTIONAL MATERIALS (REQUIRED)**

**Textbook #1**

Title: Geometry Student Edition + Digital Courseware + MathXL (8-year license)

Edition: First

Author: Charles, Hall, Kennedy, Bellman, Bragg, Handlin, Murphy and Wiggins

ISBN: 13:9780133315097

Publisher: Pearson

Publication Date: 2015

**Usage:**

- Primary Text
- Read in entirety or near

**Textbook #2**

Title:

Edition:

Author:

ISBN:

Publisher:

Publication Date:

**Usage:**

- Primary Text
- Read in entirety or near

**Supplemental Instructional Materials** *Please include online, and open source resources if any.*

**Estimated costs for classroom materials and supplies (REQUIRED).** *Please describe in detail.*  
If more space is needed than what is provided, please attach backup as applicable.

Cost for class set of textbooks: \$ 6712.92

Description of Additional Costs:

Additional costs:\$ 0

Per contract the additional resources are provided free of cost.

**Total cost per class set of instructional materials:**

\$ 6712.92

**Key Assignments (REQUIRED):**

Please provide a detailed description of the Key Assignments including tests, and quizzes, which should incorporate

not only short answers but essay questions also. How do assignments incorporate topics? Include all major assessments that students will be required to complete

Key Assignments will include:

- End of Unit Assessments
- Daily/Lesson Quizzes
- Semester Benchmarks/Finals
- Performance Tasks/ Projects
- Homework
- Midterm/mid-unit Assessments
- Cornell Notes

**Instructional Methods and/or Strategies (REQUIRED):**

Please list specific instructional methods that will be used.

Instructional Strategies will include:

- Direct Instruction
- Targeted Feedback
- Reciprocal Teaching
- Collaboration
- Adapting to learning styles and multiple intelligences
- Realia
- Modeling
- Guided and Independent practice
- Partner/ Group work
- Spiraling
- Questioning strategies that look for participation and content understanding

**Assessment Methods and/or Tools (REQUIRED):**

Please list different methods of assessments that will be used.

Assessment Methods will include:

- Type of Questions include:
  - Open Response
  - Multiple Choice
  - Performance Assessment\
  - Multiple Choice
- Investigations
- Projects
- Self-assessment
- Whiteboards
- Find the error
- Portfolios/"Notebooks"
- Ticket out the Doors
- Homework

Platforms include: Pearson, Eadms, Haiku, Desmos and MathXL

**COURSE PACING GUIDE AND OBJECTIVES (REQUIRED)**

<b>Day(s)</b>	<b>Objective</b>	<b>Standard(s)</b>	<b>Chapter(s)</b>	<b>Reference</b>
10-18	<b>Tools for Geometry</b> 1-2 Points, Lines, and Planes 1-3 Measuring Segments 1-4 Measuring Angles 1-5 Exploring Angle Pairs Prepares for	G-CO.1 G-GPE.6 G-CO.12 G-GPE.4 G-GPE.7 N-Q.1	Chapter 1	<b>Essential Standards Addressed</b>
13-21	<b>Parallel and Perpendicular Lines</b> 3-1 Lines and Angles <b>3-2 Properties of Parallel Lines</b> <b>3-4 Parallel and Perpendicular Lines</b> <b>3-5 Parallel Lines and Triangles *</b>	G-CO.1 G-CO.12 <b>G-MG.3</b> <b>G-CO.9</b> <b>G-CO.10</b> G-CO.13 G-GPE.5	Chapter 3	
15-22	<b>Congruent Triangles</b> 4-1 Congruent Figures <b>4-2 Triangle Congruence by SSS and SAS</b> <b>4-3 Triangle Congruence by ASA and AAS</b> <b>4-4 Using Corresponding Parts of Congruent Triangles</b>	<b>G-SRT.5</b> G-CO.12 <b>G-CO.10</b> G-CO.13	Chapter 4	

	<p>4-5 Isosceles and Equilateral Triangles*</p> <p>4-6 Congruence in Right Triangles (if time allows)</p> <p>4-7 Congruence in Overlapping Triangles (if time allows)</p>			
12-19	<p><b>Relationships Within Triangles</b></p> <p>5-1 Midsegments of Triangles</p> <p>5-2 Perpendicular and Angle Bisectors (Name, Identify and Draw)</p> <p>5-4 Medians and Altitudes (Name, Identify and Draw)</p> <p>5-6 Inequalities in One Triangle Extends</p> <p>5-7 Inequalities in Two Triangles Extends</p>	<p>G-CO.10 G-SRT.5 G-CO.9 G-CO.12</p>	Chapter 5	
17-26	<p><b>Polygons and Quadrilaterals</b></p> <p>6-1 The Polygon-Angle Sum Theorems</p> <p>6-2 Properties of Parallelograms</p> <p>6-4 Properties of Rhombuses, Rectangles, and Squares</p> <p>6-6 Trapezoids and Kites</p>	<p>G-SRT.5 G-CO.11 G-GPE.7 G-GPE.4</p>	Chapter 6	
10-15	<p><b>Similarity</b></p> <p>7-1 Ratios and Proportions</p> <p>7-2 Similar Polygons</p> <p>7-3 Proving Triangles Similar</p> <p>7-4 Similarity in Right Triangles</p> <p>7-5 Proportions in Triangles</p>	<p>G-SRT.5 G-GPE.5 G-SRT.4</p>	Chapter 7	



12-18	<b>Right Triangles and Trigonometry</b> <b>8-1 The Pythagorean Theorem and Its Converse</b> <b>8-2 Special Right Triangles</b> <b>8-3 Trigonometry</b> <b>8-4 Angles of Elevation and Depression</b>	G-SRT.4 <b>G-SRT.8</b> G-SRT.7 G-MG.1 G-SRT.10 G-SRT.11	Chapter 8	
9-16	<b>Transformations</b> 9-1 Translations 9-2 Reflections 9-3 Rotations	G-CO.2 G-CO.4 G-CO.5 G-CO.6 G-CO.7 G-CO.8 G-SRT.2 G-SRT.3	Chapter 9	
12-20	<b>Area</b> 1-8 Perimeter, Circumference, and Area 10-1 Areas of Parallelograms and Triangles 10-3 Areas of Regular Polygons <b>10-6 Circles and Arcs</b> <b>10-7 Areas of Circles and Sectors</b>	G-GPE.7 G-MG.1 G-CO.13 G-GMD.3 G-SRT.9 G-CO.1 G-C.1 G-C.2 <b>G-C.5</b> S-CP.1	Chapter 10	
9-16	<b>Surface Area and Volume</b> 11-1 Space Figures and Cross Sections (Vocab only) 11-2 Surface Areas of Prisms and Cylinders 11-3 Surface Areas of Pyramids and Cones	G-GMD.4 G-MG.1 G-GMD.1 G-GMD.2 G-GMD.3 G-MG.2	Chapter 11	

	11-4 Volumes of Prisms and Cylinders 11-5 Volumes of Pyramids and Cones 11-6 Surface Areas and Volumes of Spheres			

<b>C. HONORS COURSES ONLY</b>
Indicate how much this honors course is different from the standard course.

<b>D. BACKGROUND INFORMATION</b>
<b>Context for course (optional)</b>
<b>History of Course Development (optional)</b>