

HPISD Curriculum: Geometry						
Title	Estimated Duration	6 Weeks				
Unit 1: Tools of Geometry	2 weeks	1	2	3	4	5
Unit Overview						
Understand the structure of, and relationships within, an axiomatic system. Analyze geometric relationships in order to make and verify conjectures.						
Enduring Understandings						
The student will understand that:	<ul style="list-style-type: none"> • Points, lines, and planes are the foundations of geometry. • The formula for the length of any line segment is derived from the Pythagorean Theorem. • The midpoint coordinates of a segment are derived by averaging the coordinates of the segment endpoints. • The differences and similarities among congruence, length, points, lines, planes, segments, midpoints, segment bisectors, and the notation used to denote them. • Using algebraic properties, definitions, and postulates can lead to conclusions about angles and angle pairs. • Slope is the geometric way to represent rate of change on a graph and is the ratio of the vertical change (change in y value) to the horizontal change (change in x value) from one point to another in the coordinate plane. • A compass and straightedge can be used to measure congruent distances, and combinations of those measurements can be used to construct more advanced representations of geometric concepts. 					
Concepts	Guiding/Essential Questions					
<ul style="list-style-type: none"> • foundations • relationships 	<ul style="list-style-type: none"> • Why are <i>point</i>, <i>line</i>, and <i>plane</i> the undefined terms of geometry? • How does geometry help describe the physical world? • How is the distance formula related to the Pythagorean Theorem? • What are the possible relationships between two intersecting planes and a line that is not contained in either of the planes? • What would be the reasoning to justify whether all angles have complements and supplements? • Why is it justified that two planes cannot be skew? • What are the possible relationships between two intersecting planes and a line that is not contained in either of the planes? • How is the distance formula related to the Pythagorean Theorem? 					
Learning Targets						
The students will use the structure of a mathematical system , connecting definitions, postulates, logical reasoning, and theorems to make conjectures about geometric relationships.						

Formative Assessments	Summative Assessments
homework, quizzes	Plane project, test
TEKS: Readiness Standards	TEKS: Related Supporting Standards
<p>G.2B Make conjectures about angles, lines, polygons, circles, and three-dimensional figures and determine the validity of the conjectures, choosing from a variety of approaches such as coordinate, transformational, or axiomatic.</p> <p>G.7B Use slopes and equations of lines to investigate geometric relationships, including parallel lines, perpendicular lines, and special segments of triangles and other polygons.</p> <p>G.7C Derive and use formulas involving length, slope, and midpoint.</p>	<p>G.1A Develop an awareness of the structure of a mathematical system, connecting definitions, postulates, logical reasoning, and theorems.</p> <p>G.1B Recognize the historical development of geometric systems and know mathematics is developed for a variety of purposes.</p> <p>G.2A Use constructions to explore attributes of geometric figures and to make conjectures about geometric relationships.</p> <p>G.3B Construct and justify statements about geometric figures and their properties.</p> <p>G.7A Use one- and two-dimensional coordinate systems to represent points, lines, rays, line segments, and figures.</p> <p>G.9A Formulate and test conjectures about the properties of parallel and perpendicular lines based on explorations and concrete models.</p>
Processes and Skills: What students should be able to DO	Facts: What students should KNOW
<ul style="list-style-type: none"> • Apply coordinate formulas. • Use points, lines, and planes. • Extend the concept of points, lines, and planes to define segments and their bisectors. • Identify parallel, perpendicular, and skew lines. • Apply formulas to coordinate geometry. • Construct segments, angles, and bisectors. 	<ul style="list-style-type: none"> • The undefined terms in Geometry. • Segment, angle, and perpendicular bisectors • Three collinear points is a criterion for using the Segment Addition Postulate. • A ray or line must lie in the interior of an angle to use the Angle Addition Postulate • Define all types of angles and angle pairs: Supplementary, Complementary, Vertical, Adjacent angles and Linear Pairs. • Distance, Midpoint, and Slope formulas

Topics		
Distance and Midpoint Points, Lines, Planes, and Segments	Angle Measure Angle Relationships	Coordinate Geometry Parallel, Perpendicular, and Skew Lines Constructions
Language of Instruction		
Acute Angle Adjacent Angles Angle Angle Bisector Between Collinear Complementary Angles Congruent Construction Coordinate Formulas Coplanar Distance Distance Formula Endpoint Equidistant	Intersection Length Line Linear Pair Measure Midpoint Midpoint Formula Obtuse Angle Opposite Rays Parallel Perimeter Perpendicular Perpendicular Bisector Perpendicular Lines	Plane Point Ray Right Angle Segment Segment Bisector Skew Slope Slope Formula Space Straight Angle Supplementary Angles Undefined Terms Vertical Angles
State Assessment Connections		National Assessment Connections
Resources		
Glencoe: Geometry 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3.1		