# Hamilton-Wenham Regional School District

# HWRHS Common Core Standards Geometry

## Geometry Units

Unit 1 Basics of Geometry

Unit 2 Reasoning and Proof

Unit 3 Perpendicular and Parallel Lines

Unit 4 Congruent Triangles

Unit 5 Properties of Triangles

Unit 6 Quadrilaterals

*(Unit 7 is omitted, but the following units are not renumbered for textbook alignment purposes, see below\*\*\*\*\*)*

Unit 8 Similarity

Unit 9 Right Triangles and Trigonometry; the Sine and Cosine Laws

Unit 10 Circles

Unit 11 Area of Polygons and Circles

Unit 12 Surface Area and Volume

## Curriculum Notes

\*\*\*\*\*The Geometry curriculum has undergone substantial changes under CC, the greatest being the refocus of the whole curriculum around the concept of transformations as functions. For example congruent objects are now defined as isometric transformations and similarities are now defined as dilations. The main purposes of this refocusing are, of course, to achieve the logical unification of algebra and geometry, and to better prepare the student for college level mathematics such as Linear Algebra. *One consequence of this curriculum change is that the concepts in* ***Unit 7 Transformations*** *in the textbook are now integrated throughout the course and the unit is no longer taught as a stand-alone unit*.

Another major CC change is the addition of Unit sections 9.A and 9.B, the Sine and Cosine Laws, which are part of the CC Model Geometry curriculum but are NOT covered in the textbook; course teachers will provide the practice examples, highlighted in red in activities/assessments column in the map.

The final major changes are the addition of a unit on probability and the removal of units on vectors and some other minor topics from the textbook that are not part of the CC curriculum.

## Geometry Prerequisites

Honors Geometry students have usually completed Algebra 1 on the Accelerated, 7th – 8th Grade mathematics path. College Preparatory (A1 level) Geometry students have usually completed Algebra 1 in the 9th Grade.

## Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 1

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 1 Basics of Geometry 12 days PLUS an introduction to transformations (and Unit 7 material) 4 days

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| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Introduction and Unit 1.1**  **Patterns and Inductive Reasoning.**  *Mathematics application of CC Standards for English Language Learners*. | SMP 1, 2, 7  What is a conjecture? What is Inductive reasoning? What is a counterexample?  Does the student function at the level of *literal, inferential or critical/application learner?* | Visual pattern and number sequences.  Arithmetic expressions and equations. | FA Content Area Reading Inventory (CARI) on Unit 1.1 (**Content Area Reading Inventory Geometry.doc**). This diagnostic test helps classify the students by their levels of ability as *literal, inferential or critical/application learners*. This will enable the use of differentiated assessments throughout the course.  (IA) Unit 1.1 Examples, Practice and Applications (Odds classwork, Evens Homework).  (FA) Unit 1.1 Quiz. |
| **Unit 1.2**  **Points, Lines and Planes.**  G-CO 1,  G-CO 2,  G-CO 5 | SMP 1, 2, 5  What is a function?  What is a transformation?  What are points, lines and planes and what are their properties? | Input output tables for functions | (IA) Review of simple arithmetic functions and I/O tables.  (IA) Introduction to Geometer’s Sketchpad SMART Board demonstration to teach material on points, lines and planes in Unit 1.2  (IA) Unit 1.2 Examples, Practice and Applications (Odds classwork, Evens Homework).  (IA***) Introduction to transformations***. Unit 1 will introduce the concepts of translation, reflection and rotation. Subsequent units will use these concepts to develop ideas of congruence and similarity. Geometer’s Sketchpad SMART Board demonstration to teach translation of points in the plane as functions with preimage as input and image as output.  (FA) Team Sketchpad lab (STEM lab) using a sequence of transformations to carry a set of preimage points to a series of image sets.  (FA) Unit 1.2 Quiz. |
| **Unit 1.3**  **Segments and their measures.**  G-CO 1,  G-CO 2,  G-CO 4,  G-CO 5,  G-CO 6,  G-CO 12 | SMP 1, 2 ,4, 5, 6  What is a segment and what are its properties?  What is a translation transformation? | Absolute value, the ruler as number line, square, square root, algebraic expressions  The coordinate plane | (IA) Geometer’s Sketchpad SMART Board demonstration to teach the Ruler and Segment Addition Postulates, segment congruence and the Distance formula.  (IA) Unit 1.3 Examples, Practice and Applications (Odds classwork, Evens Homework).  (FA) Sketchpad lab (STEM lab) on the translation of segments in the plane as functions with endpoints as preimage (input) and image (output).  (IA) Pen and paper construction to copy a segment.  (FA) Unit 1.3 Quiz. |
| **Unit 1.4**  **Angles and their measures.**  G-CO 1,  G-CO 2,  G-CO 4,  G-CO 5,  G-CO 6,  G-CO 12 | SMP 1, 2 , 5  What is an angle and what are its properties?  What is a reflection transformation? |  | (IA) Geometer’s Sketchpad SMART Board demonstration to teach the Protractor and Angle Addition Postulates, angle classification and angle congruence.  (IA) Unit 1.4 Examples, Practice and Applications (Odds classwork, Evens Homework).  (IA) Lab on the use of the Protractor.  (IA) Pen and paper construction to copy an angle.  (FA) Sketchpad lab (STEM lab) on the reflection of segments and angles in the plane.  (FA) Unit 1.4 Quiz. |
| **Unit 1.5**  **Segment and Angle Bisectors.**  G-CO 12  G-GPE 6 | SMP 1, 2 , 4, 5  What does bisect mean? | Average calculation.  Algebraic expressions, linear equations. | (IA) Geometer’s Sketchpad SMART Board demonstration to teach segment and angle bisection and the midpoint formula.  (IA) Unit 1.5 Examples, Practice and Applications (Odds classwork, Evens Homework).  (IA) Coordinate Geometry worksheet to find the coordinates of a point that divides a segment in a given ratio, given the coordinates of the end points of the segment.  (FA) Sketchpad lab (STEM lab) to measure and bisect angles and segments.  (IA) Pen and paper construction to bisect a segment and an angle. Paper folding exercise.  (FA) Unit 1.5 Quiz. |
| **Unit 1.6**  **Angle Pair Relationships.**  G-CO 1,  G-CO 2,  G-CO 4,  G-CO 5, | SMP 1, 2 , 5  What happens when 2 lines or segments intersect? |  | (IA) Geometer’s Sketchpad SMART Board demonstration to teach vertical, complementary, supplementary angles and linear pairs.  (IA) Unit 1.6 Examples, Practice and Applications (Odds classwork, Evens Homework).  (FA) Sketchpad lab (STEM lab) to create and measure vertical, complementary, supplementary angles and linear pairs.  (FA) Sketchpad lab (STEM lab) on the rotation of segments and angles in the plane.  (FA) Unit 1.6 Quiz. |
| **Unit 1.7**  **Introduction to Perimeter, Circumference and Area.**  G-CO 1  G-CO 2  G-CO 4  G-CO 5  G-CO 12  G-MG 1  G-MG 3  G-GPE 7  N-Q 2  N-Q3  MA.3.a | SMP 1, 2 , 4, 5  What is a rotation transformation?  How can we apply our knowledge of basic geometry elements in the solution of real life problems about area and perimeter? | Evaluation of algebraic expressions, solution of equations, transposition of formulae. | (IA) Unit 1.7 Examples, Practice and Applications on calculation of the Perimeter, Circumference and Area of squares, rectangles, triangles and circles. (Odds classwork, Evens Homework).  (IA) Graph paper and string activity to estimate the area and circumference of several circles, and derive PI.    (FA) Sketchpad lab (STEM lab) on the creation, translation, reflection and rotation of a rectangle in the plane.  (FA) Unit 1.7 Quiz.  (SA) Unit 1 Test. |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 1

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 2 Reasoning and Proof 12 days

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| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 2.1**  **Conditional Statements.**  G-CO 9  *Mathematics application of CC Standards for English Language Learners*. | SMP 2, 3, 7  What is a conditional statement?  What is a hypothesis? |  | (IA) Unit 2.1 Examples, Practice and Applications to teach conditional statements, hypothesis, conclusion, counterexample, if-then form. (Odds classwork, Evens Homework).  (IA) Vocabulary Team Activity  (FA) Unit 2.1 Quiz. |
| **Unit 2.2**  **Definitions and Biconditional Statements**  G-CO 9 | SMP 2, 3, 7  What is a Definition? What is a Biconditional Statement?  What does perpendicular mean? |  | (IA) Unit 2.2 Examples, Practice and Applications (Odds classwork, Evens Homework).  (FA) Team Sketchpad lab (STEM lab) to construct perpendicular lines.  (FA) Unit 2.2 Quiz. |
| **Unit 2.3**  **Deductive Reasoning**  G-CO 9 | SMP 2, 3, 7  How can I express mathematical logic in symbolic form?  What are the laws of logic? |  | (IA) Unit 2.3 Examples, Practice and Applications (Odds classwork, Evens Homework) to teach symbolic notation (p, q, ~ etc), inverse and contrapositive of statements, laws of syllogism and detachment.  (FA) Unit 2.3 Quiz. |
| **Unit 2.4**  **Reasoning with Properties from Algebra**  G-CO 9 | SMP 2, 3, 7  What are the algebraic properties of equality and how do I apply them in a logical manner, with reasons for each step? | Solution of multi-step, linear equations. | (IA) Unit 2.4 Examples, Practice and Applications (Odds classwork, Evens Homework).  (FA) Team equation relay race; each team member must approach the board and solve one step of an equation.  (FA) Unit 2.4 Quiz. |
| **Unit 2.5**  **Proving Statements about Segments**  G-CO 6  G-CO 9 | SMP 2, 3, 7  What are the reflexive, symmetric and transitive properties of segment congruence?  How do I write a formal, 2-column proof? | Previous units and chapters. | (IA) Geometer’s Sketchpad SMART Board demonstration to illustrate unit material on segment congruence.  (IA) Unit 2.5 Examples, Practice and Applications (Odds classwork, Evens Homework).  (FA) Team equation relay race; each team member must approach the board and add statements and reasons to a 2 column proof.  (FA) Unit 2.5 Quiz. |
| **Unit 2.6**  **Proving Statements about angles**  G-CO 9 | SMP 2, 3, 7  What are the reflexive, symmetric and transitive properties of angle congruence?  What are the right angle, congruent supplements, congruent complements and vertical angles theorems? | Previous units and chapters. | (IA) Geometer’s Sketchpad SMART Board demonstration to illustrate unit material on angle congruence and angle theorems.  (IA) Unit 2.6 Examples, Practice and Applications (Odds classwork, Evens Homework).  (FA) Team equation relay race; each team member must approach the board and add statements and reasons to a 2 column proof.  (FA) Unit 2.6 Quiz.  (SA) Unit 2 Test. |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 1

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 3 Perpendicular and Parallel Lines 13 days

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| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 3.1**  **Lines and Angles.**  G-CO 6  G-CO 9  G-CO 12 | SMP 1, 2, 5, 7  What are parallel, perpendicular and transversal lines? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to show that a transversal line is a rotation and that a perpendicular line is a rotation through 90o.  (IA) Geometer’s Sketchpad Lab to create and investigate the properties of corresponding, alternate interior, alternate exterior and consecutive interior angles formed by transversal lines.  (IA) Straight edge and compass exercise to construct perpendicular lines.  (IA) Unit 3.1 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 3.1 Quiz. |
| **Unit 3.2**  **Proof and Perpendicular Lines.**  G-CO 6  G-CO 9 | SMP 1, 2, 5, 7  What are parallel, perpendicular and transversal lines? | Previous units and chapters. | (IA) Geometer’s Sketchpad SMART Board demonstration to illustrate unit material on perpendicular lines, linear pairs, complementary and right angles.  (IA) Unit 3.2 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 3.2 Quiz. |
| **Unit 3.3**  **Parallel Lines and Transversals.**  G-CO 6  G-CO 9 | SMP 1, 2, 3, 5, 7  How do you prove of corresponding, alternate interior, alternate exterior angles congruent? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to show that a parallel line is a translation.  (IA) Geometer’s Sketchpad Lab to create and investigate the properties of corresponding, alternate interior, alternate exterior and consecutive interior angles formed by parallel lines and transversals.  (IA) Unit 3.3 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 3.3 Quiz. |
| **Unit 3.4**  **Proving Lines are Parallel.**  G-CO 9 | SMP 1, 2, 3, 5, 7  How do you prove that lines are parallel? | Previous units and chapters. | (IA) Unit 3.4 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 3.4 Quiz. |
| **Unit 3.5**  **Using Properties of Parallel Lines.**  G-CO 9 | SMP 1, 2, 3, 5, 7  What are the properties of parallel, lines, how can we use these? | Previous units and chapters. | (IA) Straight edge and compass exercise to construct parallel lines.  (IA) Unit 3.5 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 3.5 Quiz. |
| **Unit 3.6**  **Parallel Lines in the Coordinate Plane.**  G-CO 2  G-CO 9  G-GPE 5 | SMP 1, 2, 3, 4, 5, 7  How do you write the equation of a line that is parallel or perpendicular to another? | The x,y coordinate plane;  Y = mX + b;  Slope = rise/run  Previous units and chapters. | (IA) Unit 3.6 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (IA) Geometer’s Sketchpad Lab to measure the slopes of parallel lines and deduce the equation of a line parallel to another line of known equation.  (FA) Unit 3.6 Quiz. |
| **Unit 3.7**  **Perpendicular Lines in the Coordinate Plane.**  G-CO 2  G-CO 9 | SMP 1, 2, 3, 5, 7  How do you write the equation of a line that is parallel or perpendicular to another? | Previous units and chapters. | (IA) Unit 3.7 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (IA) Geometer’s Sketchpad Lab to measure the slopes of perpendicular lines and deduce the equation of another line perpendicular to a line of known equation.  (FA) Unit 3.7 Quiz.  (SA) Unit 3 Test. |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 2

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 4 Congruent Triangles 13 days

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| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 4.1**  **Triangles and Angles.**  G-CO 2  G-CO 6  G-CO 10  G-CO 12  G-MG 1 | SMP 1, 2, 3, 5, 7  What is a triangle?  What kinds of triangles are there?  How do we name the sides and angles of triangles? | Previous units and chapters. | (IA) Paper and scissors activities to demonstrate the triangle sum and exterior angle theorems.  (IA) Team activity on classifying triangles and triangle vocabulary.  (IA) Unit 4.1 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 4.1 Quiz. |
| **Unit 4.2**  **Congruence and Triangles.**  G-CO 2  G-CO 6  G-CO 7  G-CO 8  G-CO 10  G-CO 12 | SMP 1, 2, 3, 5, 7  What are congruent triangles? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to measure the sides and angles of triangles.  (IA) Geometer’s Sketchpad Lab to show that when a triangle is rotated, reflected or translated, the image and preimage are congruent.  (IA) Unit 4.2 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 4.2 Quiz. |
| **Unit 4.3**  **Proving Triangles are Congruent: SSS and SAS.**  G-CO 2  G-CO 6  G-CO 10  G-CO 12 | SMP 1, 2, 3, 4, 5, 7, 8  When are two triangles congruent? | The distance formula. | (IA) Straight edge and compass exercise to construct congruent triangles.  (IA) Geometer’s Sketchpad Lab to investigate SSS and SAS, and to compare the sides of congruent right triangles in the coordinate plane.  (IA) Unit 4.3 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 4.3 Quiz. |
| **Unit 4.4**  **Proving Triangles are Congruent: ASA and AAS.**  G-CO 2  G-CO 6  G-CO 10  G-CO 12 | SMP 2, 3, 5, 7, 8  When are two triangles congruent? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to investigate ASA. (AAS will NOT be considered, as it is not in the CC curriculum, but simply an extension of ASA using the 3rd angle theorem).  (IA) Unit 4.4 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 4.4 Quiz. |
| **Unit 4.5**  **Using Congruent Triangles.**  G-CO 2  G-CO 6  G-CO 10  G-CO 12 | SMP 2, 3, 7, 8  What can I conclude when triangles are congruent? | Previous units and chapters. | (IA) Unit 4.5 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 4.5 Quiz. |
| **Unit 4.6**  **Isosceles, Equilateral and Right Triangles.**  G-CO 2  G-CO 6  G-CO 10  G-CO 12  G-CO 13 | SMP 1, 2, 3, 6, 7, 8  What are the properties of equilateral, isosceles and right triangles? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to investigate the properties of equilateral, isosceles and right triangles.  (IA) Straight edge and compass exercise to construct equilateral, isosceles and right triangles.  (IA) Unit 4.6 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 4.6 Quiz. |
| **Unit 4.7**  **Triangles and Coordinate Proof.**  G-CO 2  G-CO 6  G-CO 10  G-CO 12 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What are the properties of triangles in the coordinate plane? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to measure and investigate triangles and triangle transformations in the coordinate plane.  (IA) Unit 4.7 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 4.7 Quiz.  (SA) Unit 4 Test. |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 2

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 5 Properties of Triangles 11 days

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| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 5.1**  **Perpendiculars and bisectors.**  G-CO 10  G-CO 12 | SMP 1, 2, 3, 5, 7, 8  What are perpendicular and angle bisectors? What are the properties of the triangles created in their construction? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to measure and investigate the triangles formed by perpendicular and angle bisectors.  (IA) Unit 5.1 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 5.1 Quiz. |
| **Unit 5.2**  **Bisectors of a Triangle.**  G-CO 12 | SMP 1, 2, 3, 5, 7, 8  What are the circumcenter and incenter of a triangle? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to construct and investigate the circumcenter and incenter of a triangle.  (FA) Unit 5.2 Sketchpad Lab (above). |
| **Unit 5.3**  **Medians and Altitudes of a Triangle.**  G-CO 10  G-CO 12 | SMP 1, 2, 3, 5, 7, 8  What is a triangle median, altitude, centroid and orthocenter? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to construct and investigate the circumcenter and incenter of a triangle.  (IA) Unit 5.3 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 5.3 Quiz. |
| **Unit 5.4**  **Midsegment Theorem.**  G-CO 10  G-CO 12 | SMP 1, 2, 3, 5, 7, 8  What is a triangle Midsegment, what are its properties? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to construct and investigate triangle midsegments.  (IA) Unit 5.4 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 5.4 Quiz. |
| **Unit 5.5**  **Inequalities in a Triangle.**  G-CO 10  G-CO 12  G-MG 1 | SMP 1, 2, 3, 5, 7, 8  What are the relationships between the lengths of the sides and angles in a triangle? | Previous units and chapters. | (IA) Unit 5.5 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (IA) Hands-on lab using rods of various lengths in the attempted construction and analysis of triangles.  (FA) Unit 5.5 Quiz. |
| **Unit 5.6**  **Inequalities in Two Triangles.**  G-CO 10  G-CO 12 | SMP 1, 2, 3, 5, 7, 8  What is the Hinge Theorem? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to construct and investigate the Hinge Theorem.  (IA) Unit 5.6 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 5.6 Quiz.  (SA) Unit 5 Test. |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 2

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 6 Quadrilaterals 13 days

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| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 6.1**  **Polygons.**  G-CO 11  G-CO 12  G-MG 1  G-MG 3  MA.11.a | SMP 1, 2, 3, 4, 5, 7, 8  What is a polygon?  How do I classify polygons?  What is the sum of the interior angles of a quadrilateral? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to construct, classify and analyze polygons and their properties.  (IA) Geometer’s Sketchpad Lab to construct, classify and analyze basic quadrilateral properties and the interior angles sum theorem for a quadrilateral.  (IA) Unit 6.1 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 6.1 Quiz. |
| **Unit 6.2**  **Properties of Parallelograms.**  G-CO 11  G-CO 12  G-MG 1  G-MG 3  G-GPE 4 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What is a parallelogram and what are its properties? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to construct, classify and analyze parallelograms, their theorems and their properties.  (IA) Straight edge and compass exercise to construct and measure a parallelogram  (IA) Coordinate geometry worksheet to prove for example that four points form a rectangle.  (IA) Unit 6.2 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 6.2 Quiz. |
| **Unit 6.3**  **Proving Quadrilaterals are Parallelograms.**  G-CO 11  G-CO 12  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 7, 8  When is a quadrilateral also a parallelogram? | Previous units and chapters. | Hands-on exercise with straws and paperclips to investigate parallelograms and quadrilaterals.  (IA) Unit 6.3 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 6.3 Quiz. |
| **Unit 6.4**  **Rhombuses, Rectangles and Squares.**  G-CO 11  G-CO 12  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 7, 8  What are rhombi, rectangles and squares, and what are their properties? | Previous units and chapters. | (IA) Building a Venn diagram of the hierarchy of quadrilaterals using PowerPoint.  (IA) Geometer’s Sketchpad Lab to construct, classify and analyze rhombi, rectangles and squares, their theorems and their properties.  (IA) Unit 6.4 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 6.4 Quiz. |
| **Unit 6.5**  **Trapezoids and Kites.**  G-CO 11  G-CO 12  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What are trapezoids and kites, and what are their properties? | Previous units and chapters. | (IA) Adding trapezoids and kites to the Venn diagram of the hierarchy of quadrilaterals using PowerPoint.  (IA) Geometer’s Sketchpad Lab to construct, classify and analyze are trapezoids and kites, their theorems and their properties.  (IA) Unit 6.5 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 6.5 Quiz. |
| **Unit 6.6**  **Special Quadrilaterals.**  G-CO 3  G-CO 11  G-CO 12  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 7, 8  How do I efficiently and accurately identify the different types of quadrilaterals? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to (i) describe the rotations and reflections that translate rectangles, parallelograms, trapezoids and regular polygons onto themselves (ii) use the definition of congruence in terms of rigid motion to decide if polygons are congruent.  (IA) Unit 6.6 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 6.6 Quiz. |
| **Unit 6.7**  **Areas of Triangles and Quadrilaterals.**  G-CO 12  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  How do I calculate the areas of parallelograms, rectangles, squares, triangles, trapezoids, kites and rhombi? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to estimate then calculate with formulae the area of quadrilaterals in the coordinate plane using geometric properties, and the distance formula.  (IA) Unit 6.7 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 6.7 Quiz.  (SA) Unit 6 Test. |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 3

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 8 Similarity 16 days

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| --- | --- | --- | --- |
| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 8.1**  **Ratio and Proportion.**  G-MG 1  G-MG 2  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What is a ratio, a proportion, what are their basic properties? How do I solve problems involving ratio and proportion? | Previous units and chapters. | (IA) Hands-on lab measuring various body part dimensions, calculating and comparing various of their ratios.  (IA) Unit 8.1 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 8.1 Quiz. |
| **Unit 8.2**  **Problem Solving in Geometry with Proportions.**  G-MG 1  G-MG 2  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What are the other properties of ratios and properties, and how do I apply them in real life? | Previous units and chapters. | (IA) Geometer’s Sketchpad lab to create a to-scale blueprint of your classroom, its doors and its black/white/Smart boards.  (IA) Unit 8.2 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 8.2 Quiz. |
| **Unit 8.3**  **Similar Polygons.**  G-SRT 1  G-SRT 2  G-MG 1  G-MG 2  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What is dilation?  What is similarity?  What is similarity in terms of dilations? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to (i) explain dilation for simple segments; (ii) show that dilated quadrilaterals have proportional corresponding side lengths.  (IA) Unit 8.3 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 8.3 Quiz. |
| **Unit 8.4**  **Similar Triangles.**  G-SRT 1  G-SRT 2  G-SRT 3  G-SRT 5  G-MG 1  G-MG 2  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What are similar triangles, their properties and applications? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to (i) show that dilated triangles have proportional corresponding side lengths and congruent corresponding angles. (ii) Explain the AA triangle similarity theorem in terms of similarity transformations. (iii) show why a line has only one slope.  (IA) Unit 8.4 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 8.4 Quiz. |
| **Unit 8.5**  **Proving Triangles are Similar.**  G-SRT 4  G-SRT 5  G-MG 1  G-MG 2  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  How do I prove that triangles are similar? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to explain the SSS and SAS triangle similarity theorem in terms of similarity transformations.  (IA) Unit 8.5 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 8.5 Quiz. |
| **Unit 8.6**  **Proportions and Similar Triangles.**  G-SRT 4  G-SRT 5  G-MG 1  G-MG 2  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  How do I apply triangle similarity to solve problems involving triangle bisectors? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to illustrate the triangle and parallel line proportionality theorems  (IA) Straight edge and compass exercise to divide a segment into n equal parts.  (IA) Unit 8.6 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 8.6 Quiz.  (SA) Unit 8 Test. |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 3

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 9 Right Triangles and Trigonometry, the Sine & Cosine Laws 18 days

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| --- | --- | --- | --- |
| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 9.1**  **Similar Right Triangles.**  G-SRT 4  G-SRT 5  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What are the relationships between the 3 similar triangles resulting from an altitude drawn to the hypotenuse of a right triangle? | Previous units and chapters. | (IA) Index card activity; cut diagonally in two, then cut one half into two with an altitude to the hypotenuse. Overlay the three triangles.  (IA) Geometer’s Sketchpad Lab to illustrate the altitude-to-the-hypotenuse theorem.  (IA) Unit 9.1 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 9.1 Quiz. |
| **Unit 9.2**  **The Pythagorean Theorem.**  G-SRT 4  G-SRT 5  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What is the Pythagorean Theorem, how do we prove and apply it? | Previous units and chapters. | (IA) Two proofs shown: coordinate geometry proof and similar triangles proof.  (IA) Geometer’s Sketchpad Lab to demonstrate the theorem.  (IA) Unit 9.2 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 9.2 Quiz. |
| **Unit 9.3**  **The Converse of the Pythagorean Theorem.**  G-SRT 4  G-SRT 5  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What is the converse of the Pythagorean Theorem, how do we prove and apply it?  What is a Pythagorean Triple? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to show how the theorem can be used to classify triangles as right, acute or obtuse.  (IA) Unit 9.3 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 9.3 Quiz. |
| **Unit 9.4**  **Special Right Triangles.**  G-SRT 4  G-SRT 5  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  What are the special properties of 45-45-90 and 60-30-90 triangles? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to illustrate the special properties of 45-45-90 and 60-30-90 triangles.  (IA) Unit 9.4 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 9.4 Quiz. |
| **Unit 9.5**  **Trigonometric Ratios.**  G-SRT 5  G-SRT 6  G-SRT 7  G-MG 1  G-MG 3 | SMP 2, 3, 7  What are the sine, cosine, tangent (and reciprocal ratios) of an angle? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to teach the trig ratios.  (IA) Unit 9.5 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 9.5 Quiz. |
| **Unit 9.6**  **Solving Right Triangles.**  G-SRT 8  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  How do I calculate missing sides and angles in a right triangle ? | Previous units and chapters. | (IA) (IA) Straight edge and compass exercise to construct and measure a right triangle, and demonstrate the validity of trigonometry similarities.  (IA) Unit 9.6 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 9.6 Quiz. |
| **Unit 9.A**  **The Sine Law**  G-SRT 9  G-SRT 10  G-SRT 11  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  How do I calculate missing sides and angles in a non-right triangle ? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to teach the Sine Law  (IA) Unit 9.A Examples, Practice and Applications.  (FA) Unit 9.A Quiz. |
| **Unit 9.B**  **The Cosine Law**  G-SRT 10  G-SRT 11  G-MG 1  G-MG 3 | SMP 1, 2, 3, 4, 5, 6, 7, 8  How do I calculate missing sides and angles in a non-right triangle ? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to teach the Cosine Law  (IA) Unit 9.B Examples, Practice and Applications.  (FA) Unit 9.B Quiz.  (SA) Unit 9 Test. |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 4

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 10 Circles 10 days

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| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 10.1**  **Tangents to Circles.**  G-CO 1  G-CO 4  G-C 1  G-C 4 | SMP 1, 2, 3, 4, 5, 6, 7  What is a circle? What are its associated measurements?  What is a tangent to a circle? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to teach circle definitions, measurements and theorems, to define congruence and similarity in terms of transformations, and to show that all circles are similar.  (IA) Straight edge and compass exercise to construct a tangent line from a point outside a circle.  (IA) Unit 10.1 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 10.1 Quiz. |
| **Unit 10.2**  **Arcs and Chords.**  G-C 2  G-C 5 | SMP 1, 2, 3, 4, 5, 6, 7  What is an arc, a chord, how do we measure them? What is a radian? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to teach arc and chord definitions, measurements and theorems, calculation of arc measure (radians and degrees) and length.  (IA) Introduction to radians lesson and worksheet, (not in textbook).  (IA) Unit 10.2 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 10.2 Quiz. |
| **Unit 10.3**  **Inscribed Angles.**  G-C 2  G-C 3 | SMP 1, 2, 3, 4, 5, 6, 7  What is an inscribed angle? What are its relationships to other circle objects? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to teach inscribed angle definitions, measurements and theorems  (IA) Unit 10.3 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 10.3 Quiz. |
| **Unit 10.4**  **Other Angle Relationships in Circles.** | NOT TAUGHT IN THIS CC CURRICULUM |  | NOT TAUGHT IN THIS CC CURRICULUM |
| **Unit 10.5**  **Segment Lengths in Circles.** | NOT TAUGHT IN THIS CC CURRICULUM |  | NOT TAUGHT IN THIS CC CURRICULUM |
| **Unit 10.6**  **Equations of Circles and Parabolas.**  G-GPE 1  G-GPE 2 | SMP 1, 2, 4, 5, 6, 8  What is the equation of a circle, a parabola? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to teach the equation of the circle as the combination of two functions.  (IA) Unit 10.6 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (IA) Geometer’s Sketchpad Lab and practice exercises to teach the parameters and equation of the parabola.  (IA) Unit 10.6 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 10.6 Quiz. |

# Common Core (CC) Standards Curriculum Map Geometry (Tony Walsh) Quarter 1

## (Tony Walsh) Quarter 4

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 11 Area of Polygons and Circles 12 days

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| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 11.1**  **Angle Measures in Polygons.**  G-C 3  MA.3.a | SMP 1, 2, 3, 5, 6  What are the interior and exterior angles of a polygon and how do I measure them? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to teach the interior and exterior angle theorems.  (IA) Unit 11.1 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 11.1 Quiz. |
| **Unit 11.2**  **Areas of Regular Polygons.** | NOT TAUGHT IN THIS CC CURRICULUM |  | NOT TAUGHT IN THIS CC CURRICULUM |
| **Unit 11.3**  **Perimeters and Areas of Similar Figures.**  G-SRT 2 | SMP 1, 2, 3, 5, 6  How do I calculate areas and perimeters of similar polygons? | Previous units and chapters. | (IA) Unit 11.3 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 11.3 Quiz. |
| **Unit 11.4**  **Circumference and Arc Length.**  G-C 5 | SMP 1, 2, 4, 5, 6  How do I measure the circumference and arc length of a circle? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to measure the circumference and arc length of a circle.  (IA) Unit 11.4 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 11.4 Quiz. |
| **Unit 11.5**  **Areas of Circles and Sectors.**  G-C 5 | SMP 1, 2, 4, 5, 6  How do I measure the area of circles and sectors? | Previous units and chapters. | (IA) Geometer’s Sketchpad Lab to measure the area of circles and sectors.  (IA) Unit 11.5 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 11.5 Quiz. |
| **Unit 11.6**  **Geometric Probability.** | NOT TAUGHT IN THIS CC CURRICULUM |  | NOT TAUGHT IN THIS CC CURRICULUM |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 4

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 12 Surface Area and Volume 12 days

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| --- | --- | --- | --- |
| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| Unit 12.1  Exploring Solids.  G-GMD 1  G-GMD 2  G-GMD 4  N-Q 2  N-Q3  MA.3.a | SMP 1, 2, 7  What are polyhedral, how are they classified?  What are cross sections of 3D objects?  What is Cavalieri’s Principle? | Previous units and chapters. | (IA) Unit 12.1 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (IA) Web applet exercises on cross section and Cavalieri’s Principle.  (FA) Unit 12.1 Quiz. |
| **Unit 12.2**  **Surface Area of Prisms and Cylinders.** | NOT TAUGHT IN THIS CC CURRICULUM |  | NOT TAUGHT IN THIS CC CURRICULUM |
| **Unit 12.3**  **Surface Area of Pyramids and Cones.** | NOT TAUGHT IN THIS CC CURRICULUM |  | NOT TAUGHT IN THIS CC CURRICULUM |
| **Unit 12.4**  **Volume of Prisms and Cylinders.**  G-GMD 1  G-GMD 2  G-GMD 3 | SMP 1, 2, 4, 5, 6, 7  How do I find the volume of prisms and cylinders? | Previous units and chapters. | (IA) Unit 12.4 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (IA) Web applet exercises on cross section and Cavalieri’s Principle  (FA) Unit 12.4 Quiz. |
| **Unit 12.5**  **Volume of Pyramids and Cones.**  G-GMD 1  G-GMD 2  G-GMD 3 | SMP 1, 2, 4, 5, 6, 7  How do I find the volume of pyramids and cones | Previous units and chapters. | (IA) Unit 12.5 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 12.5 Quiz. |
| **Unit 12.6**  **Surface Area and Volume of Spheres.** | SMP 1, 2, 4, 5, 6, 7  How do I find the volume of a sphere? | Previous units and chapters. | (IA) Unit 12.6 Examples, Practice and Applications. (Odds classwork, Evens Homework).  (FA) Unit 12.6 Quiz.  (SA) Unit 12 Test. |
| **Unit 12.7**  **Similar Solids.** | NOT TAUGHT IN THIS CC CURRICULUM |  | NOT TAUGHT IN THIS CC CURRICULUM |

# Common Core (CC) Standards Curriculum Map Geometry

## (Tony Walsh) Quarter 4

## Conceptual Category

Geometry

Textbook: Geometry by Larson, Boswell and Stiff. *All references to Unit x.y in column 4 (IA, FA, SA,) are references to the activities and assessments in chapter x.y of the textbook.*

### Unit 13 Statistics and Probability 12 days

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| --- | --- | --- | --- |
| CC Standard and Content | Mathematical Practices and Essential Questions | Prior Learning | Instructional Activities(IA)  Formative Assessments(FA)  Summative Assessments(SA) |
| **Unit 13.1**  **The Rules of Probability.**  S-CP 1  S-CP 2 | SMP 1, 2, 4, 5, 6, 7, 8  What is set theory and how is it used in probability theory?  What are the basic addition and multiplication laws of probability and how are they applied in real life? | Previous units and chapters. | (IA) Graphing calculator, Excel labs and exercises to teach basic probability concepts.  (FA) Unit 13.1 Quiz. |
| **Unit 13.2**  **Conditional Probability.**  S-CP 3  S-CP 4  S-CP 5  S-CP 6  S-CP 7  S-CP 8 | SMP 1, 2, 4, 5, 6, 7, 8  What is meant by the independence of events and what are the implications for the addition and multiplication laws of probability? | Previous units and chapters. | (IA) Graphing calculator, Excel labs and exercises to teach conditional probability concepts.  (FA) Unit 13.2 Quiz. |
| **Unit 13.3**  **Probability Models, Probability Distributions.**  S-CP 9 | SMP 1, 2, 4, 5, 6, 7, 8  What are 2-way frequency tables and how may they be used to calculate probabilities?  What is a probability distribution? What is Expected Value?  What are the geometric and binomial probability distributions? | Previous units and chapters. | (IA) Graphing calculator, Excel labs and exercises to teach probability distribution concepts.  (FA) Unit 13.3 Quiz. |
| **Unit 13.4**  **Decision Making, Probability and Simulation.**  S-MD 6  S-MD 7 | SMP 1, 2, 4, 5, 6, 7, 8  What is simulation? How may I use simulation and probability as decision making tools? | Previous units and chapters. | (IA) Graphing calculator, Excel labs and exercises to teach Decision Making, Probability and Simulation concepts.  (FA) Unit 13.4 Quiz.  (SA) Unit 13 Test |