Ms. Levenson
Geometry

August 2018
Room 284

Course Outline & Expectations

The purpose of this course is to teach you the Geometry skills that will help prepare you for additional higher level math classes, professional fields, and higher education entrance exams.

Towards the end of the year, you will take the FSA Geometry EOC. The questions on this test require higher order thinking skills and application. Some things to note:

- The test has two sections and takes place over two days.

- You can only use a calculator on one section.

- The test will cover material from the whole course

- The test counts for 30% of your grade in the overall class. (If you do exceptionally well 4-5, it will BOOST your grade; if you do not pass 1-2, it will LOWER your grade)

*Some of what you learn in Geometry is a **review** of what you learned in middle school. And what you learn in this class will be reviewed and expanded upon in Algebra 2 & Pre-calculus.*

In this class, we will:

- **Review** core Algebra 1 skills
- **Learn** the concepts in Geometry (and a preview of Trigonometry)
- **Work Collaboratively** on complex, high level problems
- **Investigate** the process behind certain math concepts
- **Prove** our knowledge through formal (district- and teacher-created) and informal assessments

Florida Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

Reporting Categories

The material from Algebra 1 is broken down into 3 main categories that are covered on the EOC at the end of the year. Within each category, there are domains, and clusters, and individual standards. Here is a "brief" overview:

Congruency, Similarity, Right Triangles, and Trigonometry (46%) (MAFS.912.G-)
GCO: Congruence
- 1: Experiment with transformations in the plane
- 2: Understand congruence in terms of rigid motions
- 3: Prove geometric theorems
- 4: Make geometric constructions

SRT: Similarity, Right Triangles, and Trigonometry
- 1: Understand similarity in terms of similarity transformations
- 2: Prove theorems involving similarity
- 3: Define trigonometric ratios and solve problems involving right triangles

Circles, Geometric Measurement, and Geometric Properties with Equations (38%)
C: Circles
- 1: Understand and apply theorems about circles
- 2: Find arc lengths and areas of sectors of circles

GMD: Geometric Measurement & Dimension
- 1: Explain volume formulas and use them to solve problems
- 2: Visualize relationships between two- and three- dimensional objects

GPE: Expressing Geometric Properties with Equations
- 1: Translate between the geometric description and the equation for a conic section
- 2: Use coordinates to prove geometric theorems

Modeling with Geometry (16%)
MG: Modeling with Geometry
- 1: Apply geometric concepts in modeling situations

Online Resources we will use:

Math Nation—accessible through your portal
- Has videos & interactive practice exercises that cover every concept
- The BEST EOC practice out there!

HMH Online Textbook—accessible through your portal
- Can use in place of textbook—there is a more interactive online version, and videos that explain each concept
- Where you will complete your online HW

Khan Academy—join your "class"
- Has videos & interactive practice exercises on every topic of math, and many other classes too!
- As coach, I can assign and monitor activities for you!
- **SAT Additional Topics in Math** has SAT practice on Geometry

FSAssessments.org
- Has a practice test and more information about the EOC

Geometry Course Overview—based on the HMH Textbook

Unit 1: Transformations and Congruence

1. Tools of Geometry
   - Segment & Angle Measures & Bisectors
   - *Representing & Describing Transformations*
   - Reasoning & Proof
2. Transformations & Symmetry
   - Translations, Reflections, and Rotations
   - Investigating Symmetry
3. Congruent Figures
   - Sequence of Transformations
   - Proving & Comparing Congruent Figures

Unit 2: Lines, Angles, and Triangles

4. Lines and Angles
   - Angles Formed by Intersecting Lines
   - Proving & Writing Equations of Parallel & Perpendicular Lines
5. Triangle Congruence Criteria
   - ASA, SAS, SSS Theorems
6. Applications of Triangle Congruence
   - Justifying Constructions
   - AAS & HL Theorems
7. Properties of Triangles
   - Interior & Exterior Angles
   - Isosceles & Equilateral Triangles
   - Triangle Inequalities
8. Special Segments in Triangles
   - Perpendicular & Angle Bisectors
   - Medians, Altitudes, & Midsegments

Unit 3: Quadrilaterals and Coordinate Proof

9. Properties of Quadrilaterals
   - Properties & Conditions of Parallelograms, Rectangles, Rhombuses, & Squares
10. Coordinate Proof Using Slope and Distance
    - Slope and Parallel & Perpendicular Lines
    - Coordinate Proof Using Distance with Segments, Triangles, and Quadrilaterals
    - Perimeter & Area on the Coordinate Plane

Unit 4: Similarity

11. Similarity and Transformations
    - Dilations
    - Proving Similar Figures Using Transformations
    - Corresponding Parts of Similar Figures
    - AA Similarity of Triangles
12. Using Similar Triangles
    - Triangle Proportionality Theorem
    - Subdividing Segments

- Using Proportional Relationships
- Similarity in Right Treiangles

Unit 5: Trigonometry

13. Trigonometry with Right Triangles
    - Tangent, Sine, and Cosine Ratios
    - Special Right Triangles
    - Problem Solving with Trigonometry
14. *Trigonometry with All Triangles*
    - Law of Sines & Cosines

Unit 6: Properties of Circles

15. Angles and Segments in Circles
    - Central & Inscribed Angles
    - Angles in Inscribed Quadrilaterals
    - Tangents & Circumscribed Angles
    - Segment & Angle Relationships in Circles
16. Arc Length and Sector Area
    - Justifying Circumference & Area of a Circle
    - Arc Length & Radian Measure
    - Sector Area
17. Equations of Circles and Parabolas
    - Equation of Circle & Parabola

Unit 7: Measurement and Modeling in Two and Three Dimensions

18. Volume Formulas
    - Prisms, Cylinders, Pyramids, Cones, & Spheres
19. Visualizing Solids
    - Cross Sections & Solids of Rotation
    - Surface Area of Prisms, Cylinders, Pyramids, Cones, and Spheres
20. Modeling and Problem Solving
    - Scale Factor
    - Modeling & Density
    - Problem Solving with Constraints