

**NORTH HAVEN HIGH SCHOOL**  
**CURRICULUM GUIDES**  
MATHEMATICS  
GEOMETRY L2

Geometry L2

322

Credits: 1

**Open to:** 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> & 12<sup>th</sup> grades  
**Prerequisites:** Completion of Algebra I with a grade of “C” or better

**Course Description**

This course enables students to use the basic terms and ideas of geometry as they relate to familiar figures and objects. The properties of plane and three-dimensional figures are developed under definitions, postulates and theorems in a deductive mathematical system. In addition to this placement in the total mathematical sequence, the course shows the connection between mathematics and other areas such as art, architecture and drafting.

**Learning Expectations for Graduation**

- #1 Demonstrate conceptual understanding and provide support in solving a problem
- #3 Collect and analyze evidence in support of a position
- #5 Employ the conventions of language in communication
- #6 Evaluate and improve their work
- #7 Employ computer related technology to evaluate and present ideas

**Expectations**

- #2 Develop and maintain behavior that promotes a healthy and responsible lifestyle
- #3 Exhibit respect for themselves and others

**Mathematics Department Performance Expectations**

In addition to completing homework for every class, students are expected to:

- Complete one problem set per class
- Keep an organized notebook
- Complete instructions using a variety of tools
- Organize and write proofs
- Complete at least one application based project per term
- Take frequent quizzes
- Take two to four major tests per term

**Units**

**UNIT 1: Points, Lines, and Planes**

The student will learn how to:

1. Name and sketch geometric figures
2. Find lengths of segments and midpoints
3. Name, measure and classify angles
4. Find circumference and area of circles; area and perimeter of rectangles
5. Compare and contrast inductive and deductive reasoning
6. Analyze conditional statements
7. Write converse, inverse, and contrapositive statements
8. Write two-column proofs about important angle pair relationships
9. Identify angles formed by parallel lines and transversals
10. Prove lines parallel
11. Investigate slopes of parallel and perpendicular lines

**Instructional Strategies**

- Presentation of information by various techniques
- Individual and cooperative group discovery activities
- Individual guided practice
- Cooperative group practice
- Geometers Sketchpad activities

### Assessments

- Quizzes
- Chapter Test
- Project(s)
- Homework
- Classwork and Participation

### Resources

- Textbook: McDougal Littell Geometry, Chapters 1, 2, 3
- Workbook: McDougal Littell Geometry Resource Book, Chapters 1, 2, 3
- Textbook: Addison-Wesley Secondary Math: Focus on Geometry
- Teacher created materials

### UNIT 2: Triangles

The student will learn how to:

1. Find measures of angles of triangles
2. Write congruence statements
3. Prove triangles congruent
4. Use properties of midsegment
5. Explore properties of perpendicular bisectors, angle bisectors, medians, and altitudes of triangles
6. Apply relationships among the angles and sides of a triangle
7. Write an indirect proof
8. Use ratios and proportions to solve geometric problems
9. Determine whether two polygons or two triangles are similar
10. Use indirect measurement and similarity

### Instructional Strategies

- Presentation of information by various techniques
- Individual and cooperative group discovery activities
- Individual guided practice
- Cooperative group practice
- Geometers Sketchpad activities

### Assessments

- Quizzes
- Chapter Test
- Project(s)
- Homework
- Classwork and Participation

### Resources

- Textbook: McDougal Littell Geometry, Chapters 4, 5, 6
- Workbook: McDougal Littell Geometry Resource Book, Chapters 4, 5, 6
- Textbook: Addison-Wesley Secondary Math: Focus on Geometry
- Teacher created materials

### UNIT 3: Figures in the Plane

The student will learn how to:

1. Investigate and use the Pythagorean Theorem and its converse
2. Solve problems involving special right triangles
3. Find angle measures of polygons
4. Investigate properties of parallelograms

5. Classify quadrilaterals by their properties
6. Identify line symmetry
7. Perform reflections, rotations and transformations

#### **Instructional Strategies**

- Presentation of information by various techniques
- Individual and cooperative group discovery activities
- Individual guided practice
- Cooperative group practice
- Geometers Sketchpad activities

#### **Assessments**

- Quizzes
- Chapter Test
- Project(s)
- Homework
- Classwork and Participation

#### **Resources**

- Textbook: McDougal Littell Geometry, Chapters 7, 8, 9
- Workbook: McDougal Littell Geometry Resource Book, Chapters 7, 8, 9
- Textbook: Addison-Wesley Secondary Math: Focus on Geometry
- Teacher created material

#### **UNIT 4: Circles and Measurement**

The student will learn how to:

1. Use properties of tangents
2. Find central angles and arc measure
3. Apply properties of chords
4. Investigate inscribed angles, intercepted arcs, and angles formed by secants and tangents to a circle
5. Develop and use area formulas for polygons
6. Relate length, perimeter, and area ratios in similar polygons
7. Compare arc length and area of a sector to measurements of the whole circle
8. Investigate geometric probability
9. Explore and describe lateral area, surface area, and volume
10. Solve problems using lateral area, surface area and volume

#### **Instructional Strategies**

- Presentation of information by various techniques
- Individual and cooperative group discovery activities
- Individual guided practice
- Cooperative group practice
- Geometers Sketchpad activities

#### **Assessments**

- Quizzes
- Chapter Test
- Project(s)
- Homework
- Classwork and Participation

#### **Resources**

- Textbook: McDougal Littell Geometry, Chapters 10, 11, 12
- Workbook: McDougal Littell Geometry Resource Book, Chapters 10, 11, 12
- Textbook: Addison-Wesley Secondary Math: Focus on Geometry
- Teacher created materials