



Township of Ocean Schools

Assistant Superintendent
Office of Teaching and Learning

SPARTAN MISSION:

Meeting the needs of all students with a proud tradition of academic excellence.

DEPARTMENT Mathematics COURSE Geometry

Curriculum Development Timeline

School: Ocean Township High School

Course: Geometry

Department: Mathematics

Board Approval	Supervisor	Notes
February 2012	Janet Bluefield	Born Date
August 2017	Nichole Kerney	Revisions
March 2019	Nichole Kerney	Review
August 2022	Gerard Marrone	Alignment to Standards

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DEPARTMENT Mathematics COURSE Geometry

Township of Ocean Pacing Guide			
Week	Marking Period 1	Week	Marking Period 3
1	Foundations of Geometry	11	Similarity
2	Foundations of Geometry	12	Similarity
3	Geometric Reasoning	13	Right Triangle & Trigonometry
4	Parallel & Perpendicular Lines	14	Right Triangle & Trigonometry
5	Triangle Congruence	15	Extending Transformational Geometry
Week	Marking Period 2	Week	Marking Period 4
6	Triangle Congruence	16	Extending Perimeter, Circumference, & Area
7	Properties & Attributes of Triangles	17	Spatial reasoning
8	Properties & Attributes of Triangles	18	Circles
9	Polygons & Quadrilaterals	19	Circles
10	Polygons & Quadrilaterals	20	Probability

Core Instructional & Supplemental Materials including various levels of Texts

Core Instruction: Geometry Textbook and Ebook (Holt McDougal)
Supplemental: IXL Math, Kuta, PARCC Released Questions, and Geogebra
Special Education and ELL Supplemental: Video Tutor-phschool.com

Time Frame	2 Weeks (10 blocks)
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DEPARTMENT Mathematics COURSE Geometry

Topic
Foundations of Geometry
Alignment to Standards
<u>G.MG.1, G.CO.1, G.CO.3, G.CO.4, G.CO.12, ASSE.1, G.GPE.7</u>
Learning Objectives and Activities
SWBAT answer the following questions: • What is the distance between two cities? • How much material is needed to make a rectangular or triangular object? • In Biology, how can you apply gene mapping? • In Physics, how do angles formed by light waves bounce off objects? SWBAT demonstrate understanding of the following: • Apply basic facts about points, lines, planes, and angles. • Measuring and constructing segments and angles. • Using formulas to find distance and coordinates of a midpoint. • Identify reflections, rotations, and translations Learning Activities: • Guided Interactive Geometry Software activities. • Rope Activity for Angle Relations. • Construction of angle/segment bisectors, congruent angles/segments using Interactive Geometry Software or Patty Paper. • Booklet composed of angle relationships and formulas. • "Donut Lab"
Assessments
<u>Formative:</u> • Classwork and Homework • IXL Practice • Teacher Observation • Entrance/Exit Cards <u>Summative:</u> • Mid-unit Quizzes • Topic Tests <u>Alternative:</u> • Kahoot

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- Quizizz

Interdisciplinary Connections

Career Readiness, Life Literacies, and Key Skills

9.3.12.AC.1: In this introductory geometry unit and throughout the course students will use vocabulary, symbols and formulas common to architecture and construction.

Technology Integration

All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.

Students will access Holt McDougal online ebook to further investigate lesson concepts and demonstrate understanding of standards.

- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

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- 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

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- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping

Career Education

CRP4: Communicate clearly and effectively with reason.

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DEPARTMENT Mathematics COURSE Geometry

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Time Frame	1 Week (5 blocks)
Topic	
Geometric Reasoning	
Alignment to Standards	
G.CO.9	
Learning Objectives and Activities	
SWBAT answer the following questions: • How do the skills learned help you write geometric proofs? • How do the skills enable us to draw conclusions in science and social study courses? • How can these skills help to assess the validity of arguments in politics and advertising? SWBAT demonstrate understanding of the following: • Inductive and deductive reasoning. • Using conditional and biconditional statements. • Justifying solutions to algebraic equations. • Writing two-column and informal proofs. Learning Activities: • Handshake problem in class. • Solving algebraic equations (justifying each step) as an introduction to proof. • Scrambled proofs on index cards.	
Assessments	
<u>Formative:</u> • Daily Practice Problems • Teacher Observation • Class Debate of Approaches/Mathematical Methods • Entrance/Exit Cards <u>Summative:</u>	

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- Mid-unit Quizzes
- Topic Tests
- Problem-based Quiz/Test on Proofs

Alternative:

- Observation Assessment with Proofs Problem-solving
- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

Interdisciplinary Connections

ELA: SL.9-10.4. When students are writing proofs they will present information, findings, and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.

Career Readiness, Life Literacies, and Key Skills

Technology Integration

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DEPARTMENT Mathematics COURSE Geometry

apply understanding of standards.

- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping

Career Education

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Time Frame	1 Week (5 blocks)
Topic	
Parallel and Perpendicular Lines	
Alignment to Standards	
G.MG.1 , G.CO.1 , G.CO.9 , G.CO.12 , G.GPE.5	
Learning Objectives and Activities	
SWBAT answer the following questions: • Where are parallel and perpendicular lines used in real-life? • How do you analyze rates of change in physics and economics? • In architecture and construction, how do you ensure that opposite walls are parallel and adjacent walls are perpendicular? SWBAT demonstrate understanding of the following: • Understand properties of parallel and perpendicular lines. • Understand angles formed by parallel lines and a transversal. • Line relations – skew, parallel, & intersecting Learning Activities: • Interactive Geometry Software discovery. • Guided discovery in textbook. • Use colored tape on the floor as a coordinate grid. • Perpendicular, parallel, and skew booklet of real-life examples.	

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Assessments

Formative:

- Classwork and Homework
- IXL Practice
- Graphic Organizer
- Math Scavenger Hunt/Trail

Summative:

- Mid-unit Quizzes
- Topic Tests

Alternative:

- Project - Roadway: identify the angles formed by a transversal intersecting two or more lines in your map/roadway sketch.
- Kahoot/Quizizz

Interdisciplinary Connections

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Students will use Google Classroom to collaborate, work towards solving authentic

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Career Education

CRP2: Apply appropriate academic and technical skills.

CRP11: Use technology to enhance productivity.

Time Frame	2 Weeks (10 blocks)
Topic	
Triangle Congruence	
Alignment to Standards	
G.CO.7 , G.CO.8 , G.CO.9 , G.CO.10 , G.SRT.5 , G.GPE.4 , G.GPE.5	
Learning Objectives and Activities	
SWBAT answer the following questions: - How do these skills prepare us for Algebra II and Pre-Calculus? - In Physics, how can you solve for various measures of a triangle? - In Geography, how can you identify a location? - How can you design jewelry or greeting cards, or create a set of objects that have the same size and shape? SWBAT demonstrate understanding of the following: - Classifying triangles. - Proving triangles congruent. - Using corresponding congruent triangles in proofs. - Positioning figures in the coordinate plane. - Proving theorems about isosceles and equilateral triangles.	

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Learning Activities:

- Use construction paper strips to discover SSS.
- Proof scrambles
- Patty Paper to discover CPCTC
- Interactive Geometry Software Activities

Assessments

Formative:

- Classwork and Homework
- IXL Practice
- Teacher Observation
- Graphic Organizer
- Math Scavenger Hunt/Trail

Summative:

- Mid-unit Quizzes
- Topic Tests

Alternative:

- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

Interdisciplinary Connections

Career Readiness, Life Literacies, and Key Skills

Technology Integration

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to reflect on their learning progress.

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Career Education

CRP6: Demonstrate creativity and innovation.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Time Frame	2 Weeks (10 blocks)
Topic	
Properties and Attributes of Triangles	
Alignment to Standards	
G.CO.9 , G.CO.10 , G.C.3 , G.SRT.4 , G.SRT.6 , G.SRT.8	
Learning Objectives and Activities	
SWBAT answer the following questions: • How do these skills prepare for the study of trigonometry, algebra, and advanced mathematics? • In Physics, how do we describe motion and force? • How do we estimate travel distances?	

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- How do we assess the validity of indirect arguments outside of school?

SWBAT demonstrate understanding of the following:

- Apply properties of perpendicular and angle bisectors.
- Identify special points, segments, and lines related to triangles.
- Use inequalities in one triangle and in two triangles.
- Use Pythagorean inequalities and special right triangles

Learning Activities:

- Use Patty Paper to discover theorems.
- Use crayons or colored chalk to discover triangle inequality relationships.
- Build squares on sides and hypotenuse of right triangle and examine areas.
- Interactive Geometry Software Explorations
- Interactive Geometry Software Activities
- Discovery Worksheets

Assessments

Formative:

- Daily Practice Problems
- Teacher Observation
- Graphic Organizer

Summative:

- Mid-unit Quizzes
- Topic Tests

Alternative:

- Kahoot
- Quizizz

Interdisciplinary Connections

Career Readiness, Life Literacies, and Key Skills

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Career Education

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11: Use technology to enhance productivity.

Time Frame	2 Weeks (10 blocks)
Topic	
Polygons and Quadrilaterals	
Alignment to Standards	
G.CO.11, G.CO.13, G.SRT.5	

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Learning Objectives and Activities

SWBAT answer the following questions:

- How do these skills prepare us to find areas and volumes in geometry, algebra, and advanced mathematics courses?
- In Physics, how can you solve motion and mechanics problems?
- Outside of school, determine how devices such as cameras and binoculars work.

SWBAT demonstrate understanding of the following:

- Apply properties of polygons.
- Apply properties of special quadrilaterals.
- Determine how to show that a polygon is a special quadrilateral.
- Write proofs involving special quadrilaterals

Learning Activities:

- Discover interior angles and their sums by dividing polygon into triangles.
- Interactive Geometry Software Activities.
- Use geogebra to make shapes.
- Use index cards to discover theorems.
- Interactive Geometry Software Explorations

Assessments

Formative:

- Daily Practice Problems
- IXL Practice
- Teacher Observation
- Entrance/Exit Cards

Summative:

- Mid-unit Quizzes
- Topic Tests

Alternative:

- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

Interdisciplinary Connections

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Career Education

CRP2: Apply appropriate academic and technical skills.

CRP4: Communicate clearly and effectively with reason.

Time Frame	2 Weeks (10 blocks)
Topic	
Similarity	

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DEPARTMENT Mathematics COURSE Geometry

Alignment to Standards

[G.SRT.2, G.SRT.3, G.SRT.4, G.SRT.5, G.C.1, G.CO.2, G.GPE.6](#)

Learning Objectives and Activities

SWBAT answer the following questions:

- How do these skills prepare us for Algebra II and Precalculus?
- In Physics, how does this apply to symmetries of nature?
- In Geography, how is this exhibited in the symmetry of many natural formations as well in art?

SWBAT demonstrate understanding of the following:

- Verifying polygons are similar using corresponding angles and sides.
- Using properties of similar polygons.
- Writing proofs about similar polygons

Learning Activities:

- Use Patty Paper and millimeter measuring device to discover AA.
- Interactive Geometry Software Activities.
- Use cubes to discover ratios of areas and volumes.
- Make scale drawings.
- Interactive Geometry Software Explorations

Assessments

Formative:

- IXL Practice
- Teacher Observation
- Class Debate of Approaches/Mathematical Methods
- Entrance/Exit Cards

Summative:

- Mid-unit Quizzes
- Topic Tests

Alternative:

- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

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Career Readiness, Life Literacies, and Key Skills

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Career Education

CRP2: Apply appropriate academic and technical skills.

CRP6: Demonstrate creativity and innovation.

Time Frame	2 Weeks (10 blocks)
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Topic

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Right Triangles and Trigonometry

Alignment to Standards

[G.MG.1](#), [G.SRT.6](#), [G.SRT.7](#), [G.SRT.8](#), [*G.SRT.9 \(+\)](#), [*G.SRT.10\(+\)](#), [G.SRT.11 \(+\)](#)

Learning Objectives and Activities

SWBAT answer the following questions:

- How do these skills prepare us for trigonometry?
- How do these skills prepare us for physics and physical education?
- How do these skills prepare us to measure distance, estimate heights, or plan a course for hiking or kayaking?

SWBAT demonstrate understanding of the following:

- Apply similarities of right triangles.
- Use ratios and proportions to find missing side lengths in right triangles.
- Use trigonometric ratios to solve real-world problems.

Learning Activities:

- Songs for trig ratios.
- Use construction paper to make two congruent triangles and cut them to discover theorems.
- Straw and Protractor activity to measure tree, building, etc.
- Interactive Geometry Software Explorations.

Assessments

Formative:

- Classwork and Homework
- IXL Practice
- Class Debate of Approaches/Mathematical Methods
- Entrance/Exit Cards

Summative:

- Mid-unit Quizzes
- Topic Tests
- Problem-based Quiz/Test on Angle of Elevation/Depression - real world application

Alternative:

- Observation Assessment with Problem-solving
- Individual or group productive struggle assessment during introductory lessons

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Interdisciplinary Connections

Career Readiness, Life Literacies, and Key Skills

9.3.ST-ET.5: Students will apply the knowledge learned in STEM to solve problems in this trigonometry unit involving angle of elevation/depression and side length of a triangle in a real-world application.

Technology Integration

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Career Education

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CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11: Use technology to enhance productivity.

Time Frame	1 Week1 (5 blocks)
Topic	
Extending Transformational Geometry	
Alignment to Standards	
G.CO.2 , G.CO.3 , G.CO.5 , G.CO.6 , G.SRT.1.a , G.SRT.1.b , G.GMD.4	
Learning Objectives and Activities	
SWBAT answer the following questions: - How do these skills prepare you for future mathematics courses and art, chemistry, biology, and physics? - How would you find the shortest path, build furniture, and create art work? SWBAT demonstrate understanding of the following: - Apply rules for transformations in the coordinate plane. - Create rigid transformations. - Examine line and point symmetry Learning Activities: - Miras. - Interactive Geometry Software Activities. - World Flag Project - Art activity - use dilations to create a picture	
Assessments	
<u>Formative:</u> - Teacher Observation - Class Debate of Approaches/Mathematical Methods - Entrance/Exit Cards <u>Summative:</u> - Mid-unit Quizzes	

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DEPARTMENT Mathematics COURSE Geometry

- Topic Tests

Alternative:

- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

Interdisciplinary Connections

Career Readiness, Life Literacies, and Key Skills

Technology Integration

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DEPARTMENT Mathematics COURSE Geometry

Career Education

CRP2: Apply appropriate academic and technical skills.
CRP6: Demonstrate creativity and innovation.

Time Frame	1 Week (5 blocks)
Topic	
Extending Perimeter, Circumference, and Area	
Alignment to Standards	
A.SSE.1, G.GMD.1, G.MG.2, G.MG.3, G.GPE.7, S.CP.1	
Learning Objectives and Activities	
SWBAT answer the following questions: • How do these skills prepare you for Calculus and to find the area under the curve? • How do you find the area of countries and lengths of borders? • How can you plan a garden, analyze data in the newspaper, and solve puzzles? SWBAT demonstrate understanding of the following: • Calculate areas and perimeters of figures whose vertices are given by ordered pairs. • Calculate areas and perimeters of figures whose dimensions are found by using the Pythagorean Theorem. • Calculate areas and perimeters of customary and metric units. • Derive formulas for area and perimeter. Learning Activities: • History/Engineering: Use dimensions of a famous building, found on the internet, to find the area of irregular shapes.	
Assessments	
<u>Formative:</u> • Classwork and Homework • IXL Practice • Entrance/Exit Cards <u>Summative:</u> • Mid-unit Quizzes	

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DEPARTMENT Mathematics COURSE Geometry

- Topic Tests

Alternative:

- Project - Dart project for geometric probability
- Kahoot/Quizizz

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Career Education

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DEPARTMENT Mathematics COURSE Geometry

CRP11: Use technology to enhance productivity.

Time Frame	1 Week (5 blocks)
Topic	
Spatial Reasoning	
Alignment to Standards	
G.MG.1 , G.MG.2 , G.GMD.2(+) , G.GMD.3 , G.GMD.4	
Learning Objectives and Activities	
SWBAT answer the following questions: • How do you use these skills to prepare for future mathematics courses such as Precalculus? • How do you use these skills to study chemistry, physics, and architecture? • How do you use these skills to solve problems concerning interior design, packaging, and construction? SWBAT demonstrate understanding of the following: • Apply properties of three-dimensional figures. • Calculate the volumes of three-dimensional figures. • Examine the effects of changing the dimensions of three-dimensional figures proportionally Learning Activities: • Use polyhedrons and build using nets to develop vocabulary and patterns.	
Assessments	
Formative: • Daily Practice Problems • IXL Practice • Teacher Observation • Entrance/Exit Cards Summative: • Mid-unit Quizzes • Topic Tests	

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Alternative:

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DEPARTMENT Mathematics COURSE Geometry

CRP11: Use technology to enhance productivity.

Time Frame	2 Weeks (10 blocks)
Topic	
Circles	
Alignment to Standards	
G.C.2. , *G.C.4 (+) , G.C.5 , G.GPE.1	
Learning Objectives and Activities	
SWBAT answer the following questions: • How do these skills prepare you for Algebra II and Precalculus? • In Biology, how do we use these skills to explore cells? • In Physics, how do we use these skills to explore the laws of motion and kinematic principles? • How do you create images in Art? • How do you use these skills distances, interpret information in newspapers and magazine charts, and make designs? SWBAT demonstrate understanding of the following: • Solve problems involving circles. • Find lengths, angle measures, and areas associated with circles. • Apply circle theorems to solve a wide range of problems. Learning Activities: • Reconnect incenter and circumcenter to triangle perpendicular bisectors and angle bisectors. • Interactive Geometry Software Explorations	
Assessments	
<u>Formative:</u> • Classwork and Homework • IXL Practice • Class Debate of Approaches/Mathematical Methods • Math Scavenger Hunt/Trail <u>Summative:</u>	

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DEPARTMENT Mathematics COURSE Geometry

- Mid-unit Quizzes
- Topic Tests

Alternative:

- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

Interdisciplinary Connections

Career Readiness, Life Literacies, and Key Skills

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DEPARTMENT Mathematics COURSE Geometry

Career Education

CRP4: Communicate clearly and effectively with reason.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Time Frame | 1 Week (5 blocks)

Topic

Probability

Alignment to Standards

[S.CP.4](#), [S.CP.5](#), [S.CP.7](#), [*S.CP.9\(+\)](#)

Learning Objectives and Activities

SWBAT answer the following questions:

- How will you find probability in games and events involving chance?
- How will you compare conditional probabilities?
- How will you make mathematically informed decisions?

SWBAT demonstrate understanding of the following:

- Solve problems involving counting and arranging.
- Find theoretical, experimental, and binomial probabilities.
- Create two-way tables and conditional frequencies.

Learning Activities:

- Make a dartboard and calculate the probability of each section.

Assessments

Formative:

- Daily Practice Problems
- IXL Practice
- Teacher Observation

Summative:

- Mid-unit Quizzes

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- Topic Tests

Alternative:

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- Individual or group productive struggle assessment during introductory lessons

Interdisciplinary Connections

Science: HS-ETS1-4: In this probability unit students use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

ELA: W.9-10.1: When students are justifying their reasoning on short answer and extended constructed response questions they write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

Career Readiness, Life Literacies, and Key Skills

9.3.ST.2: When examining experimental probability data students will use technology to acquire, manipulate, analyze and report data.

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Career Education

CRP6: Demonstrate creativity and innovation.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them

Modifications (ELL, Special Education, At Risk Students, Gifted & Talented, & 504 Plans)

ELL:

- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Teacher models reading aloud daily
- Provide peer tutoring
- Use of Bilingual Dictionary
- Guided notes and/or scaffold outline for written assignments
- Provide students with English Learner leveled readers.

Supports for Students With IEPs:

- Allow extra time to complete assignments or tests
- Guided notes and/or scaffold outline for written assignments
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications

At-Risk Students:

- Guided notes and/or scaffold outline for written assignments

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- Introduce key vocabulary before lesson
- Work in a small group
- Lesson taught again using a differentiated approach
- Allow answers to be given orally or dictated
- Use visuals / Anchor Charts
- Leveled texts according to ability

Gifted and Talented:

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts
- Organize integrated problem-solving simulations
- Propose interest-based extension activities
- Expose students to beyond level texts.

Supports for Students With 504 Plans:

- Follow all the 504 plan modifications
- Text to speech/audio recorded selections
- Amplification system as needed
- Leveled texts according to ability
- Fine motor skill stations embedded in rotation as needed
- Modified or constrained spelling word lists
- Provide anchor charts with high frequency words and phonemic patterns

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