dodea

MAG401: Geometry

Course Title: Geometry
GRADE LEVEL: 9-12
CODE: MAG401
COURSE LENGTH: 36 weeks

Major Concepts/Content: This course is designed to develop and promote student reasoning and problem solving involving geometric concepts and properties. Topics of study will include deductive reasoning using points, lines, and planes; segments, angles and triangles; quadrilaterals; polygons; and three-dimensional figures. Algebraic concepts are integrated with the geometric concepts throughout the course. Applications to real life situations are prevalent throughout the course.

Major Instructional Activities: Instructional activities include teaching students to plan, organize, and complete various forms of proofs using deductive reasoning. This course involves inductive reasoning, extended projects, classroom presentations by students, open-ended investigations, and written justification by students of the solution to the problems. Cooperative learning techniques and appropriate technology should be utilized throughout the course. Students should have access to calculators at all times.

Major Evaluative Techniques: Many evaluative processes will be used to assess student's written and oral work. These include but are not limited to multiple-choice, short-answer, discussion, or open-ended questions; structured or open-ended interview; homework; projects; journals; essays; dramatization; and class presentations. Students will also be required to successfully complete written tests, which present problems with a range of difficulty based upon expectations for the course. Testing formats will include restricted time tests, take-home tests, oral tests and student produced tests. Assessment methods can be supplemented by student-produced analysis of problem situations, solutions to problems, reports on investigations, and journal entries. Students will be provided the opportunity to do chapter projects that capture the concepts and skills presented throughout the chapter unit that emphasizes real world situations

Essential Expectations: Upon successful completion of Geometry, the student should be able to:

- Use undefined terms of point, line, and plane in the Euclidean system
- Use basic geometric terminology accurately, and deduces information about basic geometric figures in solving problems
- Simplify radicals when working with the Pythagorean Theorem and special right triangles
- Dilate geometric figures in the coordinate plane
- Prove or disprove conjectures about properties of geometric figures symbolically and with concrete materials
- Solve practical problems by applying properties of lines, planes, angles, and arcs
- Use congruence and similarity in describing relationships between figures (including polygons, angles and sides of figures)
- Compare figures in terms of their symmetries using, for example, concepts of reflection, rotation, and translation
- Applies properties of general and special right triangles to solve practical problems
- Use trigonometric functions and special right triangle ratios to solve practical right triangle problems
- Classify and analyze geometric figures and proves simple things about them using deductive methods
- Use and understand relationships created by parallel lines and their transversals
- Explore geometry using paper folding and computer software
- Derive and use distance, slope, and mid-point formulas
- Organize, analyze, and display single-variable data
- Formulate hypotheses to answer a question and uses data to test hypotheses
- Recognize dependent and independent events in probability situations
- Utilize algebraic methods to find missing information about sides, segments, and angles in geometric figures
- Measure angles and segments and calculates areas and volumes
- Construct geometric figures using a straight edge and compass (and/or Mira, Patty Paper)

Last Revised: March 6th, 2009 at 3:38 pm.