

Center for Talent Development—Northwestern University
2004-2005 Saturday Enrichment Program
Session I

Rational Numbers in Geometry

Instructor: TJ Leone

Course Description

This class will develop understanding of ratios and proportions in the context of geometry. Students will learn to recognize similar triangles, to find unknown lengths using knowledge of proportions and similarity of triangles, and to demonstrate similarity of triangles when necessary data is present.

Objectives

This class adopts the following performance goals from the NCTM Principals and Standards for School Mathematics:

Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

Understand meanings of operations and how they relate to one another.

Analyze characteristics and properties of two- and three- dimensional geometric shapes and develop mathematical arguments about geometric relationships.

Apply transformations and use symmetry to analyze mathematical situations

Use visualization, spatial reasoning, and geometric modeling to solve problems

Evaluation process

Students will have the opportunity to demonstrate their learning through tests, class discussions, and documents they create in software.

Text/resources used

MicroWorlds software

Circular Reasoning software

Leone Learning Systems web site

Course Schedule

Topics covered:

- Congruent angles and angle measurement
- Perpendicular lines, parallel lines, vertical angles
- Finding congruent triangles in transformations (slide, flip, turn)
- Recognizing similar triangles through dilation and other transformations
- Sum of external angles of a triangle
- Sum of internal angles of a triangle
- Ratio and proportion
- Principles of similar triangles
- Finding missing data using principles of similar triangles

TJ owns a solo business (Leone Learning Systems, Inc.) that offers tutoring and educational software. He has a BA in Math and MS in Computer Science from the City College of New York. He is a former Montessori teacher and certified substitute teacher for the state of Illinois. He spent two years in graduate studies in education and computer science at Northwestern. His web site is <http://www.leonelearningsystems.com>.