Algebra Concepts and Connections Unit 8: Algebraic Connections to Geometric Concepts

Overview:

In this unit, students will solve problems involving distance, midpoint, slope, area, and perimeter to model and explain real-life phenomena.

Learning Targets:

In Unit 8, students will:

- Derive the distance formula through the use of Pythagorean theorem
- Use coordinates, slope relationships, midpoint, and distance formula to prove simple geometric theorems algebraically
- Compute the perimeters of polygons using the coordinates of the vertices and the distance formula
- Find the areas of rectangles and triangles using the coordinates of the vertices and the distance formula
- Show that the slopes of parallel lines are the same
- Show that the slopes of perpendicular lines are opposite reciprocals
- Given the equation of a line and a point not on the line, find the equation of the line that passes through the point and is parallel/perpendicular to the given line

Key Vocabulary: (linked to GA DOE Interactive Glossary)

Area
Blueprint
Coordinates
Distance
Distance Formula
Intersection
Line Segment
Midpoint
Parallel
Perimeter
Perpendicular
Phenomena
Proof
Reciprocal
Slope
Slope Relationships
Theorem
Vertices

Supporting Resources:

http://ctlslearn.cobbk12.org/

GA Virtual - Algebraic Connections to Geometric Concepts Overview

Midpoint of a Line Segment (mathsisfun.com)

Parallel & perpendicular lines from graph

Distance Formula