Integrated Math 1 - Unit 2: Quadrilaterals and Coordinate Geometry - Key Objectives

Geometry Basics

- Know and be able to use the basic Geometry terminology.
- Be able to write and solve equations involving angle measures to find missing values.

Parallel Lines and Transversals

- Define and be able to identify a transversal
- Define and be able to identify special angle pairs: alternate interior angles, alternate exterior angles, same-side interior angles, and corresponding angles
- Be able to use your understanding of special angle pairs to find missing values.

The Triangle Sum Theorem

- Be able to identify and use the Exterior Angle Theorem.
- Be able to identify and use the Triangle Sum Theorem

Angles in Polygons

Know the formulae for the sums of the measures of interior and exterior angles in a polygon, depending on the number of sides.

o From the angle sum formulae, be able to determine the measure of a single interior or exterior angle in a regular polygon.

Proving Quadrilateral Properties.

o Be able to classify quadrilaterals by definition.
o Know and be able to apply the properties of parallelograms, rectangles, rhombuses, and squares.
o Be able to recall and apply the properties of the diagonals, sides and angles of the following quadrilaterals: rectangles, rhombuses, parallelograms, kites, and trapezoids (trapeziums).

Slopes and Midpoint.

o Given two points, be able to find the slope and midpoint of a segment both algebraically and graphically.
o Know and be able to apply the following formulas:

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}, \quad \text{midpoint} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

The Pythagorean Theorem.

Given two side lengths in a right triangle, be able to use the Pythagorean Theorem to find the length of the third side. $a^2 + b^2 = c^2$, where c is the hypotenuse.

o Know how to use the converse of the Pythagorean Theorem to determine whether a given triangle is a right triangle.
o Be able to solve application problems involving the Pythagorean Theorem.

The Distance Formula.

o Know and be able to use the distance formula: $\text{distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

o Given coordinates of the vertices of a shape, be able to use the Distance Formula to find the side lengths of polygons.

Quadrilateral Properties Revisited through Coordinate Geometry