**Lesson Plan Outline Geometry in Construction**

**Title:**

Coordinate Proofs

**Objective(s):**

Students will use coordinates to prove that two lines are parallel or perpendicular to each other.

Students will use coordinates and theorems to prove that two triangles are similar to each other.

**Learning Standard(s):**

[CCSS.MATH.CONTENT.HSG.GPE.B.4](http://www.corestandards.org/Math/Content/HSG/GPE/B/4/)

Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*

[*CCSS.MATH.CONTENT.HSG.GPE.B.5*](http://www.corestandards.org/Math/Content/HSG/GPE/B/5/)

Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

[CCSS.MATH.CONTENT.HSG.GPE.B.6](http://www.corestandards.org/Math/Content/HSG/GPE/B/6/)

Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

**Activities:**

Students will use pictures in Geometry pad app of two different sizes to find distances and slopes of parts of the figure.

Students will use resources to write similarity proofs of various triangles; groups will present proofs to class.

**Materials:**

Geometry Pad App

Similarity Proofs