**Lesson Plan Outline Geometry in Construction**

**Title:**

Ratios and Proportions

**Objective(s):**

The students will use ratios, proportions, and dilations to find unknown heights and dimensions of objects

The students will explore the properties of similarity and similar triangles.  Students will use theorems to prove two triangles are similar.

**Learning Standard(s):**

[CCSS.MATH.CONTENT.HSG.SRT.A.1](http://www.corestandards.org/Math/Content/HSG/SRT/A/1/)Verify experimentally the properties of dilations given by a center and a scale factor:

[CCSS.MATH.CONTENT.HSG.SRT.A.1.A](http://www.corestandards.org/Math/Content/HSG/SRT/A/1/a/)A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.

[CCSS.MATH.CONTENT.HSG.SRT.A.1.B](http://www.corestandards.org/Math/Content/HSG/SRT/A/1/b/)The dilation of a line segment is longer or shorter in the ratio given by the scale factor.

[CCSS.MATH.CONTENT.HSG.SRT.A.2](http://www.corestandards.org/Math/Content/HSG/SRT/A/2/)Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.

**Activities:**

The students will be given pictures that are similar and will create the criteria for similarity.  The students will take pictures with taller objects and will use proportions and scale factor to find the height of the object.

**Materials:**

Pictures that are similar in size and shape

iPad for pictures with annotations app

Similar Triangles W.S.