**Lesson Plan Outline Geometry in Construction**

**Title:**

Translations, Reflections, & Rotations

**Objective(s):**

Students will determine the transformations occurring in the coordinate plane between two shapes.

**Learning Standard(s):**

[CCSS.MATH.CONTENT.HSG.CO.A.2](http://www.corestandards.org/Math/Content/HSG/CO/A/2/)

Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).

[CCSS.MATH.CONTENT.HSG.CO.A.3](http://www.corestandards.org/Math/Content/HSG/CO/A/3/)

Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.

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

Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

[CCSS.MATH.CONTENT.HSG.CO.A.5](http://www.corestandards.org/Math/Content/HSG/CO/A/5/)

Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.

**Activities:**

Students will be given a shape and the final result; students will determine the series of transformations needed for the shapes to lay on top of each other.

Students will be given a house design and neighborhood design; they will need to determine the positions of key construction elements for the same house designed, but transformed to a new plot of land.

**Materials:**

iPad with Geometry Pad App

New House Plot Design Activity