Transformative Geometry Unit Plan
Janika Lambeck

Title of Unit	Transformative Geometry	Grade Level	Grade 6 Curriculum
Subject	Mathematics	Time Frame	April 28 – May 30 (5 weeks)
Developed By	Janika Lambeck		

Stage 1 - Identify Desired Results

IRP Prescribed Learning Outcomes

C6 perform a combination of translation(s), rotation(s) and/or reflection(s) on a single 2-D shape, with and without technology, and draw and describe the image [C, CN, PS, T, V]

C7 perform a combination of successive transformations of 2-D shapes to create a design, and identify and describe the transformations [C, CN, T, V]

C8 identify and plot points in the first quadrant of a Cartesian plane using whole number ordered pairs[C, CN, V]

C9 perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole number vertices) [C, CN, PS, T, V]

KNOW	UNDERSTAND	DO
1. Define translations (shift), rotations, and reflections (flip). 2. Define plots, graph, Cartesian plane, and successive transformations. 3. Define perimeter, axis, and vertex.	1. How whole numbered pairs represent a plot on a graph. 2. How axis and vertex is used to rotate and flip objects. 3. How transformations we draw on paper relate to the transformations we do with real life objects and our bodies.	1. Draw transformations with or without graph paper. 2. Move shapes to demonstrate successive transformations. 3. Identify transformations in nature. 4. Use transformations to succeed in a game. 5. Plot successive transformations on graph paper.

Stage 2 – Assessment Evidence

Evidence
Through what other evidence – student work samples, observations, quizzes, tests, self-assessment or other means – will students demonstrate achievement of the desired results?

Summative Assessments:

Math Journals – Are students able to record the proper definitions in written and drawing form?

Worksheet – Are students able to demonstrate the knowledge they learnt during the lessons?

Quiz – Are students able to demonstrate the knowledge they learnt during the lessons?

Art Project - Were students able to draw all the transformations they have learnt in class using various shapes to show the various successions?

Architecture Project – Were students able to plot successive transformations on a graph in the booklet to demonstrate their knowledge?

Formative Assessments:

Transformations dance, Angle Game, Math Games (Tetris), Exit Slips

Stage 3 – Learning Plan

What teaching and learning experiences will you use to:
- achieve the desired results identified in Stage 1?
- equip students to complete the assessment tasks identified in Stage 2?

#	Lesson Title	Objective(s) Related to PLOs & KUD?	Lesson Activities	Assessment	Resources
1	**Transform. Geometry:** *Translations*	**C6** perform a combination of translation(s), rotation(s) and/or reflection(s) on a single 2-D shape, with and without technology, and draw and describe the image [C, CN, PS, T, V]	• Presentation on what the various transformations are, and where they are found in nature. • Students copy notes about translations into their Math Journals • If there is extra time, students can make shapes they can use for transformation projects. • Outdoor "Transformation Dance"	• **Math Journals** – Are students able to record the proper definitions in written and drawing form? • **Transformation Dance** – Are students able to demonstrate the various transformations with their bodies?	1. Math Journals 2. SmartBoard presentation 3. Dance moves
2	**Transform. Geometry:** *Rotations*	**C6** perform a combination of translation(s), rotation(s) and/or reflection(s) on a single 2-D shape, with and without technology, and draw and describe the image [C, CN, PS, T, V]	• Angle/rotation SmartBoard game activity. • Students copy notes about rotations with vertex in or on the shape's perimeter into their Math Journals • Student do worksheet • Students copy notes about rotations with vertex outside the shape's perimeter into their Math Journals • Student do worksheet	• **Angle Game** – Are students able to identify angles and understand the concept of rotating an object on an angle? • **Math Journals** – Are students able to record the proper definitions in written and drawing form? • **Worksheet** – Are students able to produce successful rotations with the rotation vertex on in, and outside the shape's perimeter?	1. Angle Game 2. SmartBoard presentation 3. Math Journals 4. Worksheets
3	**Transform. Geometry:** *Reflections*	**C6** perform a combination of translation(s), rotation(s) and/or reflection(s) on a single 2-D shape, with and without technology, and draw and describe the image [C, CN, PS, T, V]	• Symmetry art project • Students copy notes about flips with axis in or on the shape's perimeter into their Math Journals • Student do worksheet • Students copy notes about flips with axis outside the shape's perimeter into their Math Journals • Student do worksheet	• **Symmetry Art Project** – Were students able to demonstrate how symmetry works? • **Math Journals** – Are students able to record the proper definitions in written and drawing form? • **Worksheet** – Are students able to produce successful flip with the axis on in, and outside the shape?	1. Paint 2. Art paper 3. Math Journals 4. Worksheets

4	**Transform. Geometry:** *Transformation*	**C6** perform a combination of translation(s), rotation(s) and/or reflection(s) on a single 2-D shape, with and without technology, and draw and describe the image [C, CN, PS, T, V]	• Students complete a worksheet to demonstrate their ability to perform all the transformations we covered. • Students complete quiz about all the types of transformations covered in the unit.	• **Worksheet** – Were students able transform the shapes? • **Quiz** – Were students able transform the shapes?	1. Worksheet 2. Quiz
5	**Transform. Geometry:** *Successive transformations*	**C7** perform a combination of successive transformations of 2-D shapes to create a design, and identify and describe the transformations [C, CN, T, V]	• Outdoor "Transformation Dance" • Students copy notes about successive transformations into their Math Journals. • Students play successive transformations games such as Tetris in class. • Students write an exit slip about how these games relate to what we learn in class. • Students discuss what they wrote in their Exit slip with one another.	• **Transformation Dance** – Are students able to demonstrate successive transformations with their bodies? • **Math Journals** – Are students able to record the proper definitions in written and drawing form? • **Math Games & Exit slip** – Are students able to use transformations to succeed at the games? Are students able to make correlations between the games and the transformation classes?	1. Dance Moves 2. Math journals 3. Math games 4. Devices 5. Exit slips
6	**Transform. Geometry:** *Successive Transformation Art Project*	**C7** perform a combination of successive transformations of 2-D shapes to create a design, and identify and describe the transformations [C, CN, T, V]	• Students create minimum five successive transformations with minimum five transformations on each succession. Each succession will be a different colour.	• **Art Project** - Were students able to draw all the transformations they have learnt in class using various shapes to show the various successions?	1. Shapes 2. Pencil crayons 3. Art Paper
7	**Transform. Geometry:** *Quadrant Plotting*	**C8** identify and plot points in the first quadrant of a Cartesian plane using whole number ordered pairs[C, CN, V]	• Students copy notes about quadrant plotting into their Math Journals. • Students complete quadrant plotting worksheets.	• **Math Journals** – Are students able to record the proper definitions in written and drawing form? • **Worksheet** – Are students able to plot dots and shapes on a quadrant?	1. Math Journal 2. Worksheet
8	**Transform. Geometry:** *Plotting Transformation*	**C9** perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole number vertices) [C, CN, PS, T, V]	• Students copy notes about plotting successive transformations into their Math Journals. • Students complete plotting successive transformations worksheet.	• **Math Journals** – Are students able to record the proper definitions in written and drawing form? • **Worksheet** – Are students able to plot successive transformations on a graph?	1. Math Journals 2. Worksheet

9	**Transform. Geometry:** *Plotting Transformation Architecture Project*	**C9** perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole number vertices) [C, CN, PS, T, V]	• Students work on Architecture project. They will be architects, asked by clients to make changes to their house plans. Students must use the graph paper to make the appropriate changes.	• **Architecture Project** – Were students able to plot successive transformations on a graph in the booklet to demonstrate their knowledge?	1. Architecture Project

From: Wiggins, Grant and J. McTighe. (1998). *Understanding by Design*, Association for Supervision and Curriculum Development, ISBN # 0-87120-313-8 (pbk)