Subject/Grade: Math 9	Lesson Title: Square Roots	Teacher: Mr.Zanidean

Stage 1: Identify Desired Results

Established Goals: (Learning outcome/s & indicator/s from curriculum)

N9.3 Extend understanding of square roots to include the square root of positive rational numbers.

c) Determine the square root of a rational number that is a perfect square

d) Determine the rational number for which a given rational number is its square root

Understandings: (can also be written as 'I Can' statements) *Students will understand…* *square roots to include the square root of positive rational numbers* *U*	**Essential Questions:** Can we draw knowledge from anywhere else in the room? Do we notice any patterns? What do we do if we can't find the perfect square?
Students will know… *Rational Numbers* *Exponents* *Squares* *K*	*Students will be able to…* determine square root of a rational number *D*

Stage 2: Determine Evidence for Assessing Learning

Have the groups process each other's work and explain other groups' processes to prove they understand the concepts at hand. If they can expand or explain someone else's work, it can prove they understand the concept. If they cannot, it can identify areas of improvement that we can target with certain students.

Stage 3: Build Learning Plan

Instructional Strategies:
-Group Work
-Inquiry
-I do-We do- You Do

Set (Engagement): **Length of Time: 15 Min**	**Materials/Resources:**
Have questions written on VNPS's as students walk into the classroom. Have students move desks to create room in the center of the class leaving space near the VNPS. Get the students to break into groups to work at a certain stations. Give them 10 minutes to try to answer all of the questions on the VNPS. These questions will include squaring numbers, square roots of perfect squares (including fractions), and a challenge questions of a square root that is not a perfect square. Emphasis must be placed on showing their work.	**VNPS (White Boards, Large Paper, etc.)** **Markers** **Pencils** **Erasers**
	Possible Adaptations/ Differentiation:
	Have students come up with questions to have other groups solve if they finish ahead
Development: **Time: 25 min**	**-increase or decrease number of questions depending on comprehension of the topic.**
Once the time is up, I will regather the students in the center of the room and we will go around to each VNPS and I will call on students to explain the work that group had done. While doing this, I will get students who did not work on the board we were examining to answer the question. During this, we will get the students to work through the problems that didn't get answered. This will provide an opportunity to work on the challenge problems and work through the concepts together with guidance.	
	Management Strategies:
	Circulate the room, asks questions to groups that seem hesitant to working or causing a disturbance.
	Safety Considerations:
	Moving desks must be done with caution
Closure: **Time: 10** Put desks back in place and allow students to take a seat. Show a few more examples of square roots that aren't perfect squares and show how we can use perfect squares to reduce these numbers.	

Stage 4: Reflection
My development goal for this week will be classroom management. Having the classroom break into large groups can cause slight chaos amongst the classroom. I want to ensure I am making an effort to keep students on task and engaged. I would also like to call on students to explain answers in the board observations to ensure students are staying engaged.