



LESSON/SESSION PLAN

SUB- Mathematics	GRADE - 8	TEACHER- Gunasekhar	Review (after teaching)
TITLE: Square Roots and Cube Roots	TOTAL NUMBER OF PDS REQUIRED: 7		
Learning outcomes: What are the key learning objectives / inquiry questions for this unit?	<ol style="list-style-type: none"> 1. Understanding Square Roots: 2. Calculating Square Roots: 3. Understanding Cube Roots: 4. Calculating Cube Roots: 		
Knowledge Outcomes: (facts, figures, vocab.)	<ol style="list-style-type: none"> 5. Understanding Square Roots: <ul style="list-style-type: none"> • Students will comprehend the concept of square roots. • They will learn that the square root of a number is the value that, when multiplied by itself, gives the original number. 6. Calculating Square Roots: <ul style="list-style-type: none"> • Students will be able to find the square roots of perfect square numbers. • They will use methods such as prime factorization, estimation, and numerical tables to determine square roots. 7. Understanding Cube Roots: <ul style="list-style-type: none"> • Students will grasp the concept of cube roots. • They will recognize that the cube root of a number is the value that, when multiplied by itself three times, results in the original number. 8. Calculating Cube Roots: <ul style="list-style-type: none"> • Students will determine the cube roots of perfect cubes. • They will use techniques such as prime factorization and numerical tables to find cube roots. 		

Targeted Skills	Mathematical Skills and Processes: <ul style="list-style-type: none"> • Observation and Reporting • Explanation 21st Century Skills <ul style="list-style-type: none"> • Information Literacy • Communication 	
Learning Processes		
Materials / Resources	Collins Mathematics textbook	
Integration with art/dance /music/games/ any other subject	<ol style="list-style-type: none"> Math and Dance Integration: <ul style="list-style-type: none"> Choreography: Students can create dance routines that symbolize the concept of square roots and cube roots. For example: <ul style="list-style-type: none"> Square Roots: Dancers can perform movements that gradually expand (like the square root of a number) or movements that represent finding the midpoint between two points. Cube Roots: Choreography can involve movements that grow in a cubic manner (like the cube root of a number) or movements that emphasize three-dimensional space. Math and Music Integration: <ul style="list-style-type: none"> Rhythmic Patterns: Students can explore rhythmic patterns using square roots and cube roots. For instance: <ul style="list-style-type: none"> Square Roots: Create musical compositions with rhythms that follow the pattern of square roots (e.g., increasing durations). Cube Roots: Explore musical phrases with three distinct parts, emphasizing the concept of cubed numbers. Math and Visual Art Integration: 	

	<ul style="list-style-type: none"> • Geometric Art: Students can design visual art pieces inspired by square roots and cube roots. For example: <ul style="list-style-type: none"> • Square Roots: Create geometric patterns using squares and their roots (e.g., tile designs). • Cube Roots: Design three-dimensional sculptures or drawings that represent the concept of cubed numbers. <p>4. Math and Games Integration:</p> <ul style="list-style-type: none"> • Board Games: Develop board games where players move based on square roots or cube roots. For instance: <ul style="list-style-type: none"> • Square Roots: Players advance a number of spaces equal to the square root of a given value. • Cube Roots: Players move based on the cube root of a specific number. 	
Field trip		
Connectivity period plan		
What research teacher has done? What is something new teacher has found?		
PLAN OF PD 1	Square numbers	
<p>Introduction: How will you introduce the topic or trigger the students' interest?</p>	<p>1. Introduction and Conceptual Understanding:</p> <ul style="list-style-type: none"> • Begin by introducing the concepts of square roots and cube roots. • Explain that the square root of a number is the value that, when multiplied by itself, gives the original number. Similarly, the cube root of a number is the value that, when cubed, results in the original number. • Use visual aids, diagrams, and real-world examples to help students grasp the idea behind these roots. 	

KEY POINTS	To understand square numbers or perfect square numbers <ul style="list-style-type: none"> To understand non-square numbers. 	
Activities/Experiment	<ul style="list-style-type: none"> Get a reusable card which consists of a square grid. Tell students to draw the shape of a square inside the grid. (Example: Side of 4 units) Tell students to count the number of boxes/squares present inside the sketched square. (Example: 16 boxes) Tell students to repeat the activity for squares of different sizes Rhythmic Patterns: Students can explore rhythmic patterns using square roots and cube roots. For instance: <ul style="list-style-type: none"> Square Roots: Create musical compositions with rhythms that follow the pattern of square roots (e.g., increasing durations). 	
HW /ACTIVITY	Help learners to attempt of Exercise 3.1. (Q.1)	
PLAN OF PD 2	Properties of Square numbers	
REVISION OF RECAP OF THE PRE PD	Square numbers	
KEY POINTS	To learn about the properties of square numbers	
Activities/Experiment	<p>Prepare chits containing random numbers from 1 to 30 and their square numbers. (Ensure that all the chits are unique)</p> <ul style="list-style-type: none"> Mix them in a bowl and ask each student to pick up one chit from the bowl. Students will take turns and calls out the numbers in their chits. The student having the square of the number that is called out should come and pair up with the student who called out the number. Continue the game until all the students pair up Choreography: Students can create dance routines that symbolize the concept of square roots and cube roots. For example: <ul style="list-style-type: none"> Square Roots: Dancers can perform movements that gradually expand (like the square root of a number) or movements that represent finding the midpoint between two points. 	

HW /ACTIVITY	Help learners to attempt Exercise 3.2	
PLAN OF PD 3 and 4	Square roots	
REVISION OF RECAP OF THE PRE PD	Properties of Square numbers	
KEY POINTS	To find square root through prime factorization <ul style="list-style-type: none"> • To find square root by division method 	
Activities/Experiment	<ul style="list-style-type: none"> • Distribute the Bingo card to the students, which consist of perfect square numbers. • Play by calling out each number. (For example: Number 6 squared, students will cover up the number 36) • The group which gets "BINGO" first, wins. 	
HW /ACTIVITY	Help learners to attempt Exercise 3.1 and 3.2	
PLAN OF PD 5	Square root of Decimals and Fractions	
REVISION OF RECAP OF THE PRE PD	Square roots	
KEY POINTS	<ul style="list-style-type: none"> • To find square root of decimals • To find square root of fractions 	
Activities/Experiment	<ul style="list-style-type: none"> • Prepare the activity cards containing the steps of long division method for finding the square root of decimals. • Some steps should be left blank, or some wrong steps should be included. • Distribute activity cards to each group. • Ask the students to either fill the blanks or to correct the answers if they are wrong. • Discuss the answers in the whole class. 	
HW /ACTIVITY	Help learners to attempt Revision Exercise 3.3	
PLAN OF PD 6	Cube numbers and the Properties of Cube numbers	
REVISION OF RECAP OF THE PRE PD	Square root of Decimals and Fractions	
KEY POINTS	<ul style="list-style-type: none"> • To understand about cube numbers • To learn properties of cube numbers 	

Activities/Experiment	<ul style="list-style-type: none"> • Divide the class into several groups. • Distribute a set of interlocking cubes to each group. • Ask each group to make a cube of different dimensions. • Cube Roots: Choreography can involve movements that grow in a cubic manner (like the cube root of a number) or movements that emphasize three-dimensional space. 	
HW /ACTIVITY	Help learners to attempt Exercise 3.4. (Q.1)	
PLAN OF PD 7	Prime Factorization of Cube numbers and Cube roots	
REVISION OF RECAP OF THE PRE PD	<ul style="list-style-type: none"> • Cube numbers and the Properties of Cube numbers 	
KEY POINTS	<ul style="list-style-type: none"> • To find prime factorization of cube numbers • To find the cube roots of a number by prime factorization 	
Activities/Experiment	<p>Prepare a maze on cubes and cube roots. A sample maze template is given below for reference.</p> <ul style="list-style-type: none"> • Divide the students into groups and distribute the maze to each group. • Ask each group to solve the maze. • Cube Roots: Explore musical phrases with three distinct parts, emphasizing the concept of cubed numbers. 	
HW /ACTIVITY	Help learners to attempt Exercise 3.5	