

Unit 12- Radicals

Content Area: **Mathematics**
Course(s): **Algebra, Math 8**
Time Period: **May**
Length: **10 Days**
Status: **Published**

Unit Summary

In this unit, students consider radicals and radical equations. They begin by exploring the properties of radicals (product property and quotient property) while making connections to operations with integers, rational numbers, and polynomials. Students also learn how to express radicals in standard radical form. As the unit progresses, these concepts are expanded to radicals with variable radicands and other root indexes (cube roots, fourth roots, etc.). Students will also apply these developing skills to solving equations with radicals and word problems involving radicals.

Standards

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.K-12.8	Look for and express regularity in repeated reasoning.
MA.N-RN.A	Extend the properties of exponents to rational exponents.
MA.N-RN.A.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.
MA.N-RN.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
MA.A-CED.A	Create equations that describe numbers or relationships
MA.A-CED.A.1	Create equations and inequalities in one variable and use them to solve problems.
MA.A-REI.A.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
MA.A-REI.B	Solve equations and inequalities in one variable
MA.A-SSE.A.1a	Interpret parts of an expression, such as terms, factors, and coefficients.
MA.A-SSE.B.3c	Use the properties of exponents to transform expressions for exponential functions.
CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.
TECH.8.1.8.A.CS1	Understand and use technology systems.
TECH.8.1.8.A.CS2	Select and use applications effectively and productively.
TECH.8.1.8.D.CS2	Demonstrate personal responsibility for lifelong learning.

Student Learning Objectives

- Students will learn to understand the parts and structure of a radical
- Students will learn to apply the product and quotient property of radicals
- Students will learn to apply rules of radicals to rewrite radicals with numeric and variable radicands in standard radical form.
- Students will learn to apply rules of radicals to multiply, divide, add, and subtract radicals.
- Students will learn to extend the product property of radicals to distribute radicals.
- Students will learn to extend the properties and characteristics of radicals to radicals that have a root index other than 2.
- Students will learn to rewrite powers with rational exponents into their equivalent radical form.
- Students will learn to rewrite radicals into powers with rational exponents.
- Students will learn to solve equations with radicals.
- Students will learn to extend radicals to basic geometry problems.

Essential Questions

- Why have so many ways of representing a single value come to be?

Enduring Understandings

- Students will understand that equivalent expressions can be represented in a variety of forms.
- Students will understand that we can use radicals to model and solve real-life geometric problems.

Application

- Students will be able to independently use their learning to evaluate and simplify expressions with radicals.
- Students will be able to independently use their learning to solve equations with radicals.

Skills

Students will be skilled at:

- Applying rules of radicals to expressions and equations.