Unit 2: Complex Numbers and Radicals

Content Area: **Math**
Course(s):
Time Period: **September**
Length: **7 classes**
Status: **Published**

State Mandated Topics Addressed in this Unit

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N/A	N/A

Complex Numbers and Radicals

Learning Objectives

- Objective 1 - Know the definition of the complex number, i.
- Objective 10 - Dividing radicals
- Objective 2 - Know the form a+bi
- Objective 3 - Use communitive property involving i^2.
- Objective 4 - Use the associative property involving i^2.
- Objective 5 - Use the distributive property involving i^2.
- Objective 6 - Add, subtract, and multiply involving i^2.
- Objective 7 - Simplify radicals, including algebraic radicals
- Objective 8 - Adding and subtracting radicals
- Objective 9 - Multiplying radicals

Essential Skills

- Essential Skill 1 - The artist will know the definition of the complex number, i.
- Essential Skill 10 - The artist will be able to rewrite expressions using difference of cubes.
- Essential Skill 11 - The artist will be able to rewrite expressions using sum of cubes.
- Essential Skill 12 - The artist will be able to simplify radicals, including algebraic radicals
- Essential Skill 13 - The artist will be able to adding and subtracting radicals
- Essential Skill 14 - The artist will be able to multiply radicals
- Essential Skill 15 - The artist will be able to dividing radicals
- Essential Skill 2 - The artist will know the form a+bi

- Essential Skill 3 - The artist will be able to use communitive property involving i^2.
- Essential Skill 4 - The artist will be able to use the associative property involving i^2.
- Essential Skill 5 - The artist will be able to use the distributive property involving i^2.
- Essential Skill 6 - The artist will be able to add, subtract, and multiply involving i^2.
- Essential Skill 7 - The artist will be able to factor expressions.
- Essential Skill 8 - The artist will be able to identify structure to rewrite expressions.
- Essential Skill 9 - The artist will be able to rewrite using difference of squares.

Standards

MATH.9-12.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.
MATH.9-12.N.RN.A.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.
MATH.9-12.N.RN.A.3	Simplify radicals, including algebraic radicals (e.g., $\sqrt[3]{54} = 3\sqrt[3]{2}$, simplify $\sqrt{32x^2}$).
MATH.9-12.N.CN.A.1	Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.
MATH.9-12.N.CN.A.2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
MATH.9-12.A.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.

Instructional Tasks/Activities

- Academic games & Competitions
- Arts inspired projects
- Formative Assessments
- Ladder Activity
- Notes
- Worksheets

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Journal / Student Reflection
- Kahoot
- Other named in lesson

- Peer Review
- Performance
- Problem Correction
- Project
- Quiz
- Rubric
- Teacher Collected Data
- Test
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Power point
- Quizizz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw

- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- large print
- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

The honors track will move at a faster pace for this unit. They will have more in depth critical thinking and analysis type questions. They will also rationalize denominators with binomials for complex numbers and radicals. Honors will also apply complex numbers to abstract ideas.

Resources

- Resource 1 - https://njctl.org/courses/math/algebra-ii/