Radically Connected

Learning Radicals with Social Media
Algebra I

Carrie Wiederholz

Target Audience

- 8th Grade Algebra classes
- Students have 1:1 chrome books

Time Length

- Class Length = 42 minutes
- One week unit

Big Idea:

Students need to understand that radical expressions really represent an irrational number and can be written in a variety of forms.

Essential Question:

How are radical expressions represented?

Lesson Overview

- Students will first learn how to simplify radicals by factoring them into perfect squares.
- Through the use of an Edmodo poll and posted math questions, students will work together to explore multiplying and dividing radicals.
- Students will compare adding and subtracting like terms to adding and subtracting radicals as well as post informative internet resources on Edmodo.
- Edmodo class discussions throughout the week will help students communicate with each other to expand their knowledge and think critically.

Daily Social Media Interaction

- **Monday:** While learning how to simplify radicals, students will work on a partner matching activity through Edmodo where students each post 2 questions, must answer 2 questions, and confirm correctness.
- **Tuesday:** While learning how to multiply and divide radicals, students will complete 3 (one multiplying and two dividing) poll questions and write questions/comments as needed.
- **Wednesday:** While learning how to add and subtract radicals, students will work with a partner find an informative video, worksheet or website that explains adding and subtracting radicals and post on Edmodo site. In addition they will post difficult IXL questions.

IXL

Edmodo

Daily Social Media Interaction (continued)

- **Thursday:** While practicing simplifying, adding, subtracting, multiplying and dividing radicals, students will use the study guide to take a poll of the most difficult question as well as continue a thread of questions about the study guide on Edmodo.
- **Friday:** While practicing simplifying, adding, subtracting, multiplying and dividing radicals, students will create 5 of their own questions and answer 5 other questions as a way to study for the quiz.

IXL

Edmodo

Backward Design Lesson

Teacher: Carrie Wiederholz	Subject: Algebra I	UNIT: Radicals
NJCCCS: G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. A.REI.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. A.CED.1 Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*	**Content Statement** **Simplifying radicals** is the process of manipulating a radical expression into a simpler or alternate form.	**Cumulative Progress Indicator (CPI)** 3.3.8 A. Discussion (small group and whole class) 2. Present ideas and opinions spontaneously in response to a topic or other speakers. 3.3.8 B. Questioning (Inquiry) and Contributing 4. Solve a problem or understand a task through group cooperation. 3.3.8 C. Word Choice 1. Paraphrase, illustrate, clarify, and/or expand on a topic or idea.

	Monday	Tuesday	Wednesday	Thursday	Friday
Essential Questions: What should students know, understand, and be able to do?	How are radical expressions represented?	How are radical expressions represented?	How are radical expressions represented?	How are radical expressions represented?	How are radical expressions represented?
Enduring Understandings	Students will simplify radicals.	Students will multiply and divide with radicals.	Students will add and subtract with radicals.	Students will add, subtract, multiply and divide with radicals.	Students will add, subtract, multiply and divide with radicals.
Guiding Question(s)	How do radicals compare to square roots? How are perfect squares related to simplifying radicals? How do you know if a radical is simplified?	How do you multiply radicals? How do you divide radicals? What do you do if there is a radical in the denominator of a fraction?	How does adding and subtracting radicals compare to adding and subtracting like terms? Why is it important to check for simplified radicals first?	How do you know if a radical is simplified? Which expressions cannot be simplified? How does adding and subtracting radicals compare to multiplying and dividing radicals?	How do you know if a radical is simplified? Which expressions cannot be simplified? How does adding and subtracting radicals compare to multiplying and dividing radicals?
III: Anticipatory Set	Have students name the perfect squares from 1 – 12 without using their calculators. Review estimating square roots.	Have students find the prime factorization of two expressions; one without variables and one with variables.	Have students complete an adding and subtracting like terms example.	Have students apply the Distributive property with variables to demonstrate the difference in multiplication versus addition or subtraction.	

Backward Design Lesson (cont.)

IV. Procedures (Teaching Strategies, Activities, Technology, Materials)	1. Do Now – Perfect Squares and Estimating Square Roots 2. Teach Simplifying Radicals lesson with and without variables. 3. Partner Matching Activity through Edmodo where students each post 2 questions, must answer 2 questions, and confirm correctness.	1. Do Now – Prime Factorization 2. Teach Multiplying and Dividing Lesson with and without variables. 3. Complete 3 (one multiplying and two dividing) poll questions and write questions/comments as needed.	1. Do Now – Like Terms 2. Go over the "Like" (more difficult) problems from the homework 3. Teach Adding and Subtracting Lesson with and without variables. 4. With a partner find an informative video, worksheet or website that explains adding and subtracting radicals and post on Edmodo site.	1. Do Now – Distributive Property 2. Go over any unanswered comments from the discussion the night before. 3. Using the study guide take a poll of the most difficult question. 4. Continue thread of questions about study guide on Edmodo as completing study guide.	1. Questions/Comments that need to be addressed from Edmodo conversations the night before. 2. Take quiz.
V. Assessment	Edmodo activity Participation Class notes Homework	Edmodo activity Participation Class notes Homework	Edmodo activity Participation Class notes Homework	Edmodo activity Participation Class notes Homework	Edmodo activity Homework QUIZ
VI. Homework	1. Watch flipped classroom video posted on Edmodo and take notes. 2. Post a question, comment or respond to another student about the video.	1. Post two questions (one about multiplying and one about dividing radicals) for fellow classmates to answer. 2. Answer two questions posted by classmates. 3. "Like" a more difficult problem.	1. Comment at least two student resources from class. 2. Work on IXL (Algebra EE.4) and post questions on Edmodo as students come across more difficult questions. 3. Respond to at least one post.	1. Create five possible test questions and post on Edmodo for classmates to answer. 2. Answer at least five questions. (There may only be one response per question unless the creator determines the first person was incorrect or you are posting a different answer).	None

Expected Outcomes

- Students will simplify simple radical expressions in order to identify various forms of radicals.
- Students will be able to use addition, subtraction, multiplication and division with radicals in order to better simplify radicals.
- Students will be able to post on Edmodo in order to communicate with their peers about radicals.
- Students will be able to create new radical questions in order to help their peers practice the properties of radicals.
- Students will be able to communicate on Edmodo through new posts and comments in order to provide feedback to their peers and demonstrate their understanding of radicals.

Assessment

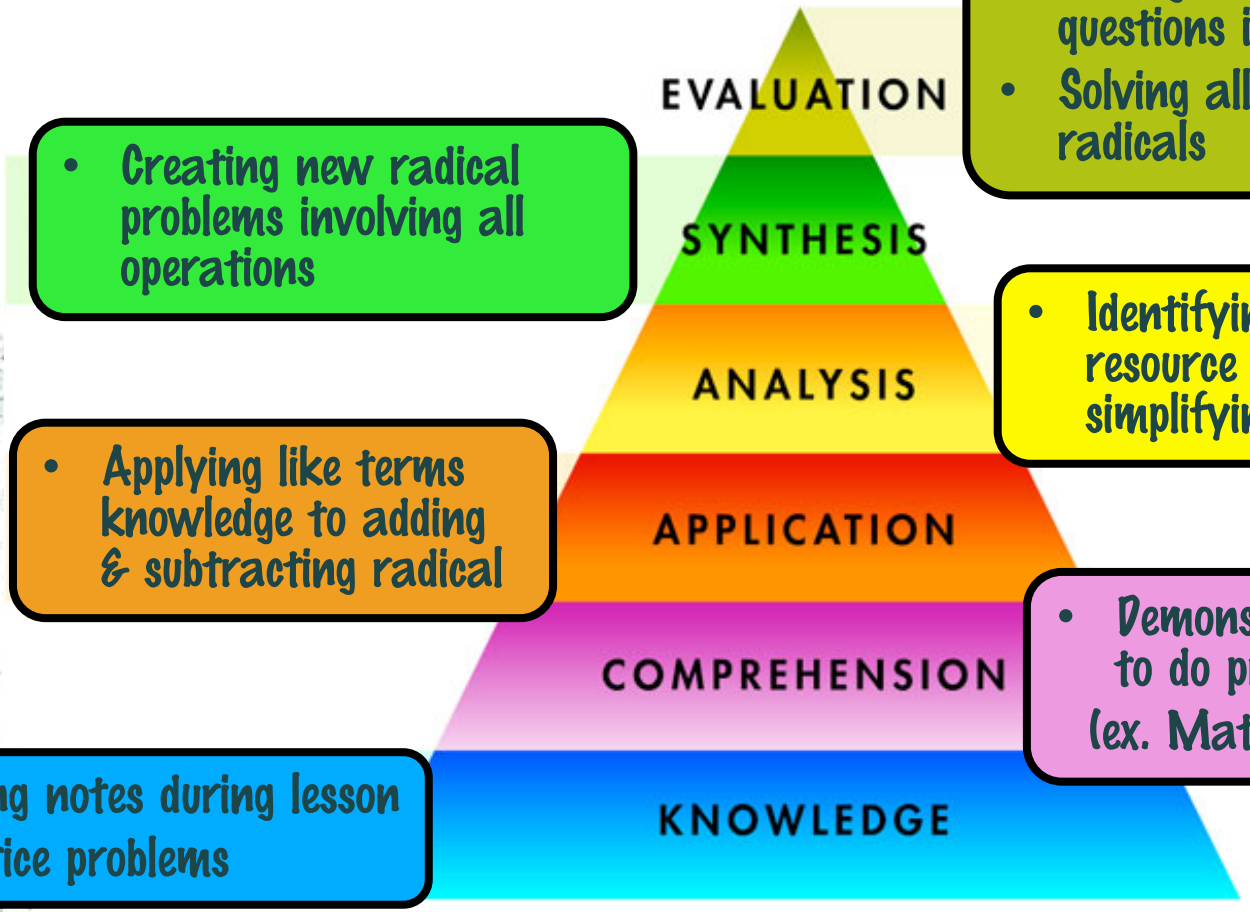
Formative

- Edmodo activity
- IXL activity
- Class participation
- Class notes
- Homework

Summative

- Quiz
- Unit Test

Bloom's Taxonomy



- Rating difficulty of questions in a poll
- Solving all types of radicals

- Creating new radical problems involving all operations

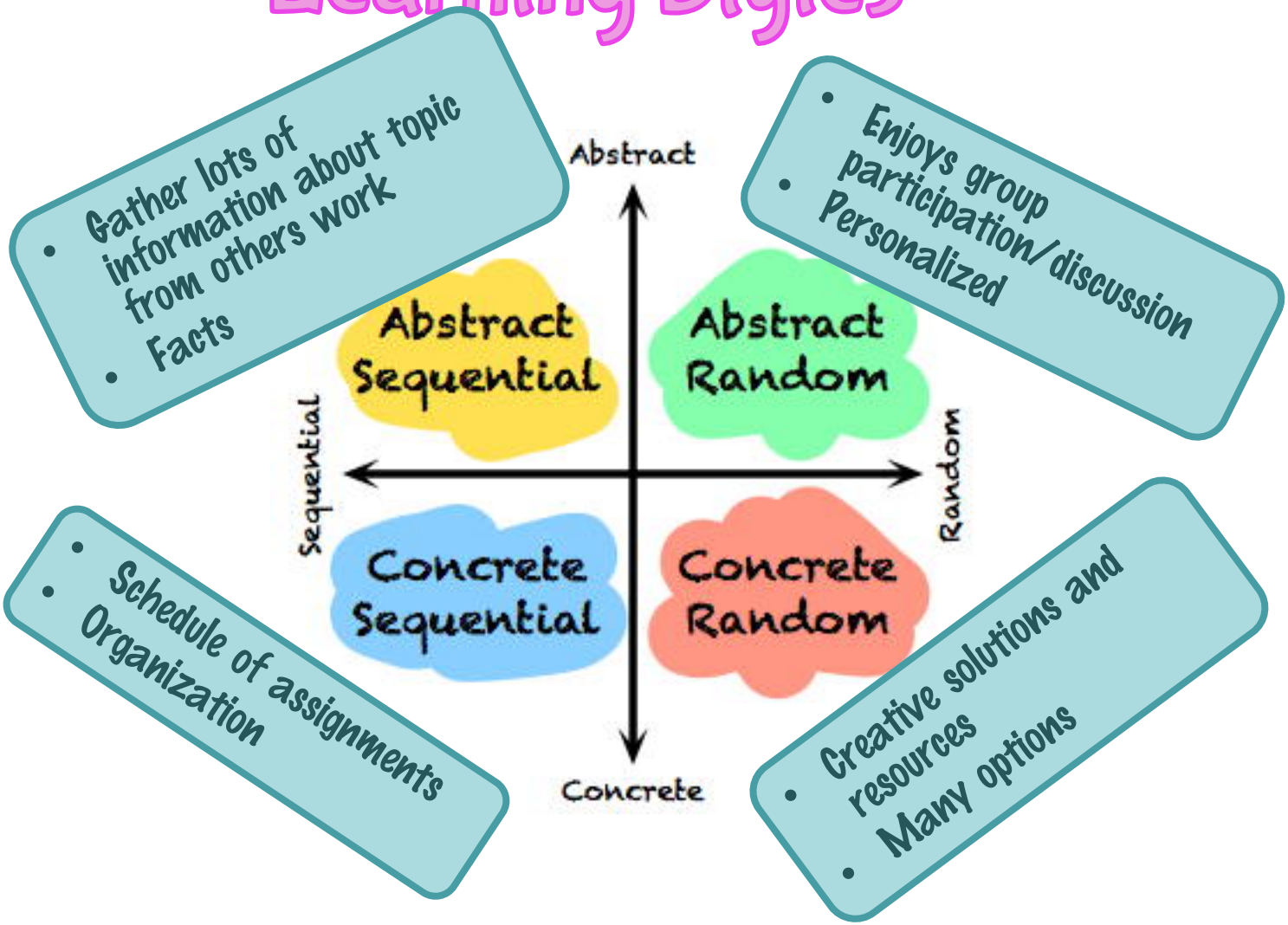
- Identifying a helpful resource for simplifying radicals

- Applying like terms knowledge to adding & subtracting radical

- Demonstrating how to do problems (ex. Matching Activity)

- Taking notes during lesson
- Practice problems

Learning Styles



Works' Cited

- Charles, R.I. (2012). *Algebra I: Common Core*. (Vol. 2). Boston, MA: Pearson
- Download.jpeg. Digital image. N.p., n.d. Web. 27 May 2017.<http://qk.ronbassett.com/wp-content/uploads/2016/02/blooms_taxonomy.jpg>.
- *Edmodo_logo.png.*. Digital image. N.p., n.d. Web. 27 May 2017.<https://brand.edmodo.com/downloadable_assets/logos/JPEG/edmodo_logo.jpg>.
- Gardner, H. (1983). *Frames of Mind: The Theories of Multiple Intelligences*. New York: Basic Books
- Gregorc, A. (1985). *The Gregorc Style Delineator. A Self-Assessment Instrument for Adults*. Columbia, CT: Gregorc Associates.
- Gregorc.jpg. Digital image. N.p., n.d. Web. 27 May 2017.<http://www.incredibleart.org/files/images>.
- Ixl-favicon.png. Digital image. N.p., n.d. Web. 27 May 2017.https://www.ixl.com/math/.