Lesson Plan Template

Grade: 9	Subject: Algebra
Materials: Algebra I textbook, notebook, writing utensils, calculator.	**Technology Needed:** iPad, laptop or technology of some sort if preferred over pen and paper

Instructional Strategies:	Guided Practices and Concrete Application:
Instructional Strategies: Direct instruction Guided practice Socratic Seminar Learning Centers Lecture Technology integration Other (list) Peer teaching/collaboration/ cooperative learning Visuals/Graphic organizers PBL Discussion/Debate Modeling	Large group activity Hands-on Independent activity Technology integration Pairing/collaboration Imitation/Repeat/Mimic Simulations/Scenarios Other (list) Explain: Students will follow along during the notes and take their own notes or go on the notes online and fill them out that way. They will follow along during the guided practice and then on their own they will attempt the independent practice problems. Homework will be done independently.

Standard(s):	Differentiation
Standard(s): HS.A-APR.7 Add, subtract, multiply, and divide rational expressions. **Objective(s):** Students will understand that rational expressions form a system comparable to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression. **Bloom's Taxonomy Cognitive Level:** Application	**Below Proficiency:** Print out the class notes for these students and pair them up to work with other students. Also allow group work on assignment **Above Proficiency:** Assign 1 or 2 bonus problems that are more difficult than the rest. **Approaching/Emerging Proficiency:** Allow working in groups with students of similar proficiency. **Modalities/Learning Preferences:** **Visual Preference:** Have notes online on the class page for students to view either during or after the class. While also displaying everything in my notes up on the board. **Audio Preference:** Verbally explain what I am doing and what each part of the class notes means. Notes online will allow them to listen to my lesson and then go back and look at anything discussed in class. **Tactile Preference:** Write up on the board everything from the class notes so the students who best learn by copying notes will have exactly what are in my notes and what I have said verbally. **Kinesthetic:** Have any student who likes to move around, come up to the board and attempt a problem or have them copy down the steps as the class goes through them during the guided practice.

Classroom Management- (grouping(s), movement/transitions, etc.)	Behavior Expectations- (systems, strategies, procedures specific to the lesson, rules and expectations, etc.)
The answers to the previous assignment will be displayed at the front on the board. The students will take out their previous day's assignment, and grade their assignment themselves, then putting their score at the top of the paper for me to come around and record what their scores were.	Expect students to be quiet while I am explaining and laying out the basis to the topic, and raising their hands to ask a question or make a comment about the topic. Once into guided practice problems, students can give out answers and steps without raising hands in order to get the flow of conversation going.

Minutes	Procedures
2	**Set-up/Prep:** Review basic properties of adding like terms
3	**Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)** Have students do quick warm up review problems with like terms.

7	**Explain: (concepts, procedures, vocabulary, etc.)** Introduce new vocab words, exponents properties and adding/subtracting procedures, and how the new vocab words relate to the procedures.
13	**Explore: (independent, concreate practice/application with relevant learning task -connections from content to real-life experiences, reflective questions- probing or clarifying questions)** Start with 2-3 guided practice problems where as a class I help them through each step and problem to get to the correct answer. Then move to 2-3 independent practice problems that they can attempt by themselves or in groups of 2-3. They can do the problems on a technology device or with pen/paper.
5	**Review (wrap up and transition to next activity):** We will then go over the answers to the independent practice problems and clear up any confusion or questions, and then assign the homework problems for the lesson, allowing the rest of class for the students to work on the homework.

Formative Assessment: (linked to objectives)
  Progress monitoring throughout lesson- clarifying questions, check-
  in strategies, etc.
Asking if there are any questions or if they're understanding the steps as I am going through the guided practice problems. Having the students check their answers from the independent practice problems, and answering any questions or clarifying why a student may have gotten a wrong answer.
 	
  Consideration for Back-up Plan: Have 3 more guided practice and 3 more independent practice problems in case students are having difficulty understanding the topic.
	Summative Assessment (linked back to objectives)
	  End of lesson:
	Homework problems related to the lesson.
	
	  If applicable- overall unit, chapter, concept, etc.:

Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

Notes:

Factor.

1. $2x^2 - 3x + 1$ 　　　　　　2. $4x^2 - 9$ 　　　　　　3. $5x^2 + 6x + 1$

_____ – the quotient of two polynomials.

_____ – the numerator and denominator of a rational expression have no common factor

1. What is $\dfrac{x^2 - 6x - 16}{x^2 + 5x + 6}$ in simplest form? State restrictions on the variable.

2. What is the product $\dfrac{x^2 - 25}{x^2 + 4x + 3} \cdot \dfrac{x^2 + x - 6}{x - 5}$ in simplest form? State any restrictions on the variable.

3. What is the quotient $\dfrac{x^2 + 5x + 4}{x^2 + x - 12} \div \dfrac{x^2 - 1}{2x^2 - 6x}$ in simplest form? State any restrictions on the variable.

4. Find the product in simplest form of:

$$\frac{\left(2x^2+7x-15\right)}{\left(4x^2-8x+3\right)}\cdot\frac{\left(2x^2+x-1\right)}{\left(x^2+6x+5\right)}$$

5. Find the quotient in simplest form of:

$$\frac{\left(12x^2-22x+8\right)}{\left(3x\right)}\div\frac{\left(3x^2+2x-8\right)}{\left(2x^2+4x\right)}$$

Homework:

Simplify

1. $\dfrac{18x^6}{27x^4}$

2. $\dfrac{x^2+6x+8}{3x+12}$

3. $\dfrac{x^2-7x+12}{x^2+2x-15}$

Multiply or divide.

4. $\dfrac{x+3}{x^2-4x+4} \cdot \dfrac{x^2-x-2}{x^2+4x+3}$

5. $\dfrac{x^2-x-12}{3x+9} \div \dfrac{x^2+x-20}{x+5}$

6. $\dfrac{15x^2}{45x^3} \div \dfrac{5x^6}{9x^4}$

7. $\dfrac{6}{x^2-9x+20} \cdot \dfrac{5x-25}{3x-6}$

8. $\dfrac{6x-12}{4x^2} \cdot \dfrac{3x^3}{2x-4}$

9. $\dfrac{3x-21}{x^2-3x-28} \cdot \dfrac{5x+20}{2x+8}$

10. $\dfrac{x^2 - 5x - 6}{2x + 6} \div \dfrac{x^2 - 3x - 4}{4x + 12}$

11. $\dfrac{25xy^3}{35x^4y^2} \cdot \dfrac{14xy}{10x^2y^3}$

12. $\dfrac{4x}{x + 1} \cdot \dfrac{x^2 - 6x - 7}{x^2 - 7x}$

13. $\dfrac{6x - 30}{x^2 - 7x + 10} \cdot \dfrac{7x - 14}{6x}$