UNIT PLANNER – Coming Soon!

1. Teacher Name: *Allison Duncan* 2. Course/Content/Grade: *Secondary II 10th Grade*  3. Unit/Module/Topic :*Unit 1, Lesson 1.3.1 Defining Complex Numbers, 1.3.2, Adding and Subtracting Complex Numbers Lesson 1.3.3 Multiplying Complex Numbers (If time)* 4. Plan Duration: *90 minutes*

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| **5. Core Standard(s):** | *N.CN.1 – Know there is a complex number i such that i2 = -1, and every complex numbers has the form a + bi with a and b real.**N.CN.2 – Use the relation i2 = -1 and the commutative properties to add subtract, and multiply complex numbers* | **6. Objective(s):** | * *I can understand that the set of complex numbers includes the set of all real numbers and the set of imaginary numbers.*
* *I can express numbers in the form a + bi.*
* *I can add, subtract, and multiply complex numbers*
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|  **7. Essential Vocabulary:** | *Real numbers**Imaginary numbers**a + bi**Complex numbers**i* | **8. Inter-Disciplinary Connections:** | *Shared vocabulary: argument, analysis* |
|  **9. Assessing for Student Learning:** | *Students will understand complex numbers by rewriting radicals using i. (Guided Notes 1.3.1, Practice 1.3.1)**Students will add and subtract complex numbers. (Guided Notes 1.3.2, Practice 1.3.2)**(If time) Students will multiply complex numbers. (Guided Notes 1.3.3, Practice 1.3.3)**Students will apply complex numbers by completing problem-based tasks. (Problem-based task 1.3.1, 1.3.2, and 1.3.3)* | **10. Technology Integration: (When applicable)** | **Teacher Use:** | **Student Use:** |
| *Smart board**Doc camera* |  |
| 11. Area for Content Specific Additions – *Practice Standard 4: Model with Mathematics, Practice Standard 6: Attend to Precision, Practice Standard 8: Look for and express Regularity in Repeated Reasoning* |
| **12. Pacing****(mins.)** | **13. Lesson Sequence****(What You Do When: Including Explicit Instruction/Guided Inquiry)** | **14. DOK Level** | **15. Grouping and Scaffolding Structures (including interventions for diverse learners)** | **16. Engagement & Checking for Understanding** **(OTRs: What will students be saying,** **writing, reading & doing)** |
| 1st day |  |  |  |  |
| *5 min* | *Starter: Work with a partner to answer the following question: can you find the solution to* $\sqrt{-25}$*. Why or why not?*  | *3* | *Work with partner**Whole class discussion* | *Discuss with partner**Write answers to warm up**Thumbs up or down yes or no you can find a solution* |
| *5 min* | *Cloze read introduction on pg U1-88* |  | *Whole class*  | *Read paragraph, choral read left out words* |
| *15 – 20 min* | *Small group learning of 1.3.1, student leader facilitates learning of 1.3.1**Give student leader copy of teacher U1-88 and U1-89**Graphic organizer for 1.3.1 key concepts**Partner work on Practice 1.3.1**May need teacher to do whole class with simplifying imaginary powers* | *2* | *Station groups**Whole class (if needed)* | *Fill in graphic organizer**Fill in student workbook with examples* *Practice 1.3.1**Teacher monitor, clarify misunderstandings* |
| *5 - 10 min* | *Go over answers to practice 1.3.1**Clarify any questions* | *1* | *Whole class* | *Students check answers* |
| *20 – 30 min* | *Power point for 1.3.2**Explicit instruction for examples:**Teacher: example 1, student generated examples* *Class: (2 + 3i) + (1, - 6i) and (5 – 2i) – (-4 – i)**Partner: (3 – 2i) +(3 + 2i) and (10 – 5i) – (6 – 3i)**Individual: 1 – 4 Practice 1.3.2**Repeat for examples 2, 3, and 4**Individual work will be: Practice 1.3.2 problems* | *2 - 3* | *Whole Class**Individual* | *Note taking in student workbook**Fill in examples in student workbook**Individual practice 1.3.2**Teacher monitor during partner and individual work (take note for groupings for multiplying)* |
| *10 – 15 min* | *If needed:**Small group reteach and enrich based on practice 1.3.2**Reteach using resource book problems**Enrich in partners: problem based task (with coaching questions)* *If reteach NOT needed, go on to 1.3.3**Introduction, key concepts, and examples 1 and 2* | *2 - 3* | *If needed:**Skill-based groups**Partner* | *Problems 1.3.2 in student resource book**1.3.2 problem-based task**What is not finished in class is to be finished at home* |
| *5 – 10 min* | *Closure – exit ticket*  | *2* | *Individual* |  |
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| **17. Closure: (Students reflecting on their learning and providing feedback on their understanding to the teacher)** | *Exit ticket**What did we do today?**What did we learn today?**What questions do I still have?* |
| **18. Feedback to students: (Teacher providing feedback to students on their learning and growth)** | *Feedback to students through skill-based groups at end of class**If skill-based groups not needed, go over responses to “what did we learn today?” at beginning of next class and comment on responses* |

**19. Lesson Plan Reflection Questions**

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| 1. Were my students ready for this lesson? What data supports this? *Yes. Gave progress assessment at the end of 1.2 35/40 student in class answered 4/5 questions correctly*
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| 1. Was the instructional objective met? How do I know students learned what was intended?  *As they were completing independent problems, I circulated the room to monitor their progress, students were able to complete the independent examples correctly, and were able to complete the Practice 1.3.1, and 1.3.2 correctly*
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| 1. Were the students productively engaged? How do I know? *Yes, all students participated in CLOZE reading, station groups were no more than 3, so students weren’t able to “opt-out” of participating in small groups very easily. As I monitored the room, only 2 – 3 students were off task, I called them back on task.*
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| 1. Did I alter my instructional plan as I taught the lesson? How and why? *Yes. I noticed that at the end of 1.3.2 about 30% of the class was still struggling with reducing imaginary numbers and applying the exponent rules to i, so instead of moving on to multiplying complex numbers, I did skill-based groups and enriched the students with the problem based task and retaught the striving learners*
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| 1. If I had the opportunity to teach the lesson again to the same group of students, would I do anything differently? What? Why? *I would not have chosen Jordan for a group leader. Last time he was a group leader, he was not on task and I thought I would give him another chance, but he was not a good facilitator, and Paige ended up facilitating…maybe I should make her group leader next time.*
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| 1. Are my students ready to “move on”? If yes, how do I know? If not, what adjustments/re-teaching do I need to make to ensure student understanding? *Half the kids are ready to move on, half are not. I need to find a different way to reteach the strugglers. The Khan Academy video suggested in Walch might be a good resource. Then the enrich students could do “The Ohm Zone activity while the struggling learners watch Khan, take notes, and reflect on their understanding.*
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