IB AA HL Y2 Planner – Unit 3 Number and Algebra

Teacher(s)	Joanna Smith		Subject group and course	Mathematics – Analysis and Approaches			
Course part and topic	Unit 3: Number and Algebra Topic 1: AHL 1.10 – 1.15 Review SL: 1.1-1.10		SL or HL/Year 1 or 2	HL, Yr 2		Dates	January

Unit description and texts	DP assessment(s) for unit
Number and algebra allow us to represent patterns, show equivalencies and make generalizations which enable us to model real-world situations. Algebra is an abstraction of numerical concepts and employs variables which allow us to solve mathematical problems. Text – Oxford Mathematics Analysis and Approaches HL (1.4, 3.2, 3.4, 10.1 – 10.3	Cumulative Test - Mid Year - January Questions for the cumulative assessments come from released questions in the IB Questionbank. Each summative assessment is cumulative with the majority (60-75%) of the test coming from the content covered between summative assessments. Content will also include daily warmup topics from the time period between assessments (review of SL topics)

INQUIRY: establishing the purpose of the unit

Transfer goals
List here one to three big, overarching, long-term goals for this unit. Transfer goals are the major goals that ask students to "transfer" or apply, their knowledge, skills, and concepts at the end of the unit under new/different circumstances, and on their own without scaffolding from the teacher.

Students should be able to:

Use methods of proof to validate statements

Represent partial fractions and complex numbers in different forms and expand the binomial theorem for non-integer indices allowing us to easily carry out seemingly difficult calculations.

Make connections between vectors, complex numbers, and polar coordinates.

ACTION: teaching and learning through inquiry

Content/skills/concepts—essential understandings	Learning process
	Check the boxes for any pedagogical approaches used during the unit. Aim for a variety of approaches to help facilitate learning.
Students will know the following content: ● Formats for complex numbers (Cartesian, polar, Euler) ● Graphing on the complex plane (Argand diagram) Students will develop the following skills: ● Utilize the binomial theorem for non-integer exponents ● Rewrite rational expressions as partial fractions ● Perform operations with complex numbers in different formats Students will grasp the following concepts: ● Counting principles can be used to determine the number of possible outcomes ● The type of solution (real vs complex) gives information about equations in real world contexts. ● Proof serves to validate mathematical formulae and the equivalence identities.	Learning experiences and strategies/planning for self-supporting learning: ☒ Lecture ☐ Socratic seminar ☒ Small group/pair work ☐ PowerPoint lecture/notes ☒ Individual presentations ☐ Group presentations ☐ Student lecture/leading ☐ Interdisciplinary learning Details: Each section will start with direct instruction and introduction from the instructor. Students will work in small groups to solve problems and complete explorations – some will be consistent across groups, some will be unique allowing for each group/individual to have time to present their work. Discussions regarding method, alternate approaches, and efficiency will be regularly included in the class as students individually present their problems to the group.. ☐ Other/s:

	Formative assessment:
	Topic Quiz #4 – Mid January
	Lesson textbook problems
	Content specific IB Questionbank practice
	Summative assessment:
	Cumulative Test - Mid Year - January
	Questions for the cumulative assessments come from released questions in the IB Questionbank. Each summative assessment is cumulative with the majority (60-75%) of the test coming from the content covered between summative assessments. Content will also include daily warmup topics from the time period between assessments (review of SL topics).
	Differentiation: ☐ Affirm identity ☒ Value prior knowledge ☐ Scaffold learning ☒ Extend learning Details: This unit will utilize prior knowledge of solving equations and binomial theorem to build and extend their knowledge of complex numbers and their multiple formats. Students will make connections to vectors (magnitude and modulus; argument and direction).

Approaches to learning (ATL)

Check the boxes for any explicit approaches to learning connections made during the unit. For more information on ATL, please see the guide.

☒ Thinking

☒ Social

☒ Communication

☐ Self-management

☐ Research

Details:

Thinking - making connections within the content and applications

Social – partner work

Communication – utilizing the language and notation of mathematics

Language and learning	TOK connections	CAS connections
Check the boxes for any explicit language and learning connections made during the unit. For more information on the IB's approach to language and learning, please see the guide.	Check the boxes for any explicit TOK connections made during the unit	Check the boxes for any explicit CAS connections. If you check any of the boxes, provide a brief note in the "details" section explaining how students engaged in CAS for this unit.
☒ Activating background knowledge ☐ Scaffolding for new learning ☒ Acquisition of new learning through practice ☐ Demonstrating proficiency Details: Students will use the language of mathematics in connect prior knowledge of complex numbers with the extension to polar form. Students will learn new vocabulary, formats and notation and gain mastery of them through practice.	☐ Personal and shared knowledge ☐ Ways of knowing ☒ Areas of knowledge ☐ The knowledge framework Details: AHL 1.15 allows students the opportunity to study how mathematicians prove the theorems and foundations they base their calculations on.	☐ Creativity ☐ Activity ☐ Service Details: N/A

Resources

List and attach (if applicable) any resources used in this unit

Textbook - Mathematics: Analysis and Approaches HL (Oxford – 2019)
IB QuestionBank
Revision Village Website videos and Question banks
Myimaths.com

Stage 3: Reflection—considering the planning, process and impact of the inquiry

What worked well	What didn't work well	Notes/changes/suggestions:
List the portions of the unit (content, assessment, planning) that were successful	*List the portions of the unit (content, assessment, planning) that were not as successful as hoped*	*List any notes, suggestions, or considerations for the future teaching of this unit*