DP AI SL Planner – Unit 3, Topic 2: Functions

Teacher(s)	Michelle Desmarais	**Subject group and course**	Mathematics – Applications and Interpretations		
Course part and topic	Unit 3 Topic 2 – Functions 2.1-2.6	**SL or HL/Year 1 or 2**	SL, Yr 2	**Dates**	8 weeks November – January (split over two semesters)
Unit description and texts		**DP assessment(s) for unit**			
The function unit will teach students many different functions (linear, exponential, quadratic, cubic, polynomial, sinusoidal) and how to model the world around them with these mathematical functions. Oxford AI textbook: Chapter 5: 5.1, 5.2, 5.4 Chapter 9: 9.1-9.3 Chapter 10: 10.3-10.4 Chapter 11: 11.1-11.3		Assessment #6 (2.1- 2.5) Assessment #7 (2.5-2.6) All assessments will use previous IB exam questions from the Questionbank Additional questions will be adapted from Oxford text to cover new content not previously included in IB exams.			

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:

- Identify, solve, and model with different types of functions.
- Manipulate different forms of functions, identifying key features from equations and graphs.
- Use functions to model real world situations.

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.*
<u>Students will know the following content:</u> ● Functions: linear, exponential, quadratic, cubic, polynomial, direct/inverse variation, and sinusoidal. <u>Students will develop the following skills:</u> ● Writing, solving, graphing, identifying key features of functions. <u>Students will grasp the following concepts:</u> ● Functions can be represented in multiple ways (equations, graphs, tables, etc). ● Functions can be used to model real world scenarios.	Learning experiences and strategies/planning 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. Discussions regarding method, alternate approaches, and efficiency will be regularly included in the class. Students have a background in many of these topics from previous math courses. The teacher will provide multiple resources electronically and in person to support student learning and extensions. ☐ Other/s:

	Formative assessment: IB Questionbank Practice problem sets TOTD – quick checks HW quizzes: quadratics, exponentials, sinusoidal functions
	Summative assessment: Assessment #6 (2.1- 2.5) Assessment #7 (2.5-2.6)
	Differentiation: ☒Affirm identity—build self-esteem ☒Value prior knowledge ☒Scaffold learning ☒ Extend learning Details: Students have seen geometric topics in previous courses. This unit will build on their background in algebra 1 and algebra 2. They will also be given multiple opportunities to practice math skills with IB questionbank problems and optional resources from Khan Academy and Delta Math, where available.

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, choosing appropriate functions to model the situations at hand

Social – partner/group work

Communication – utilizing the language and notation of functions – describing function features and writing functions in appropriate function notation

Language and learning *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.*	**TOK connections** *Check the boxes for any explicit TOK connections made during the unit*	**CAS connections** *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 have a background in functions from previous courses. This unit will build on their knowledge of types of functions and extend into new concepts and applications, specifically modeling.	☒ Personal and shared knowledge ☐ Ways of knowing ☐ Areas of knowledge ☐ The knowledge framework Details: Students will have to consider the logical/cultural limitations to their models.	☐ Creativity ☐ Activity ☐ Service Details: N/A
Resources *List and attach (if applicable) any resources used in this unit*		

Textbook - Mathematics: Applications & Interpretations. Chapters 5, 9, 10, 11 IB QuestionBank Khan Academy Delta Math

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

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