

## DP AI SL Planner – Topic 2: Functions

<b>Teacher(s)</b>	Echo Fritch	<b>Subject group and course</b>	Mathematics – Applications and Interpretations		
<b>Course part and topic</b>	Topic 2 – Functions 2.1-2.6	<b>SL or HL/Year 1 or 2</b>	SL, Yr 2	<b>Dates</b>	8 weeks November – January (split over two semesters)
<b>Unit description and texts</b>		<b>DP assessment(s) for unit</b>			
<p>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.</p> <p>Pearson AI textbook:            Chapter 2: Functions            Chapter 6: Modelling Real-life Phenomena</p>		<p>Assessment #4 (2.1- 2.6: Linear/Inverse/Exponential/Cubic)            Assessment #5 (2.1-2.6: Quadratic/Sinusoidal)            All assessments will use previous IB exam questions from the Questionbank            Additional questions will be adapted from Pearson text to cover new content not previously included in IB exams.</p>			

### ***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
<p><u>Students will know the following content:</u></p> <ul style="list-style-type: none"> <li>• Functions: linear, exponential, quadratic, cubic, polynomial, direct/inverse variation, and sinusoidal.</li> </ul> <p><u>Students will develop the following skills:</u></p> <ul style="list-style-type: none"> <li>• Writing, solving, graphing, identifying key features of functions.</li> </ul> <p><u>Students will grasp the following concepts:</u></p> <ul style="list-style-type: none"> <li>• Functions can be represented in multiple ways (equations, graphs, tables, etc).</li> <li>• Functions can be used to model real world scenarios.</li> </ul>	<p><i>Check the boxes for any pedagogical approaches used during the unit. Aim for a variety of approaches to help facilitate learning.</i></p> <p>Learning experiences and strategies/planning strategies/planning for self-supporting learning:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Lecture</li> <li><input type="checkbox"/> Socratic seminar</li> <li><input checked="" type="checkbox"/> Small group/pair work</li> <li><input checked="" type="checkbox"/> PowerPoint lecture/notes</li> <li><input type="checkbox"/> Individual presentations</li> <li><input type="checkbox"/> Group presentations</li> <li><input type="checkbox"/> Student lecture/leading</li> <li><input type="checkbox"/> Interdisciplinary learning</li> </ul> <p>Details:</p> <p>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. Teacher will provide multiple resources electronically and in person to support student learning and extensions.</p>

	<input type="checkbox"/> Other/s:
	<p><b>Formative assessment:</b></p> <p>IB Questionbank Practice problem sets</p> <p>TOTD – quick checks</p> <p>HW quizzes: linear, quadratics, exponentials, sinusoidal functions</p>
	<p><b>Summative assessment:</b></p> <p>Assessment #4 (2.1- 2.6: Linear/Inverse/Exponential/Cubic)</p> <p>Assessment #5 (2.1-2.6: Quadratic/Sinusoidal)</p> <p>All assessments will use previous IB exam questions from the Questionbank Additional questions will be adapted from Pearson text to cover new content not previously included in IB exams.</p>
	<p>Differentiation:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Affirm identity—build self-esteem</li> <li><input checked="" type="checkbox"/> Value prior knowledge</li> <li><input checked="" type="checkbox"/> Scaffold learning</li> <li><input checked="" type="checkbox"/> Extend learning</li> </ul> <p>Details:</p> <p>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 Delta Math, where available.</p>

### 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.

<input checked="" type="checkbox"/> Activating background knowledge <input type="checkbox"/> Scaffolding for new learning <input checked="" type="checkbox"/> Acquisition of new learning through practice <input checked="" type="checkbox"/> Demonstrating proficiency <p>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.</p>	<input checked="" type="checkbox"/> Personal and shared knowledge <input type="checkbox"/> Ways of knowing <input type="checkbox"/> Areas of knowledge <input type="checkbox"/> The knowledge framework <p>Details: Students will have to consider the logical/cultural limitations to their models.</p>	<input type="checkbox"/> Creativity <input type="checkbox"/> Activity <input type="checkbox"/> Service <p>Details: N/A</p>
<p><b>Resources</b></p> <p><i>List and attach (if applicable) any resources used in this unit</i></p>		
<p>Textbook - Pearson Mathematics Applications &amp; Interpretations. Chapters 2 and 6          IB QuestionBank          Delta Math</p>		

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

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