

## Analysis & Approaches DP Topic 1 Planner

<b>Teacher(s)</b>	Emily Foster	<b>Subject group and course</b>	IB Analysis & Approaches		
<b>Course part and topic</b>	Topic 1: Numbers & Algebra	<b>SL or HL/Year 1 or 2</b>	SL, Year 1	<b>Dates</b>	3 Weeks
<b>Unit description and texts</b>		<b>DP assessment(s) for unit</b>			
Numbers and algebra allows us to represent patterns, show equivalencies and make generalizations which enable us to model real-world situations.		Formative Quiz Topic 1 Summative Test  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.			

### ***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:

- Students should be able to model real-life situations with the structure of arithmetic & geometric sequences & series.
- Students should be able to use logarithm laws to find inverses of exponential functions which model real-life situations.
- Students should understand and make connections regarding the binomial theorem and its relationship to Pascal’s triangle and that it is an efficient method for expanding binomial expressions.

## ***ACTION: teaching and learning through inquiry***

Content/skills/concepts—essential understandings	Learning process <i>Check the boxes for any pedagogical approaches used during the unit. Aim for a variety of approaches to help facilitate learning.</i>
<p><u>Students will know the following content:</u></p> <ul style="list-style-type: none"> <li>Sigma Notation</li> <li>Algebraic Proofs</li> <li>Arithmetic &amp; Geometric sequences &amp; series</li> <li>Laws of integer and rational exponents</li> <li>Laws of Logarithms</li> <li>Binomial Theorem</li> </ul> <p><u>Students will develop the following skills:</u></p> <ul style="list-style-type: none"> <li>Convert calculator notation to scientific notation</li> <li>Solve exponential equations</li> <li>Use of Pascal's triangle</li> <li>Use of combination for binomial expansion</li> </ul> <p><u>Students will grasp the following concepts:</u></p> <ul style="list-style-type: none"> <li>Financial applications and compound interest are directly related to sequences and series and laws of logarithms.</li> <li>Simple deductive proofs connect algebraic concepts such as binomial theorem and exponent laws.</li> </ul>	<p>Learning experiences and 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 checked="" 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 – 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.</p>

	<p><b>Formative assessment:</b></p> <p>Hwk Quiz: Log Properties, Binomial Theorem, Rational Exponents</p> <p>Hwk Quiz: Arithmetic &amp; Geometric Sequences &amp; Series</p>
	<p><b>Summative assessment:</b></p> <p>Formative Quiz</p> <p>Topic 1 Summative Test</p> <p>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.</p>
	<p><b>Differentiation:</b></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 type="checkbox"/> Extend learning</li> </ul> <p><b>Details:</b></p> <p>This unit will utilize prior knowledge of solving equations and binomial theorem to build and extend their knowledge on solving logarithmic and exponential equations including real world applications with compound interest.</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 Social and communicating by working in pairs, warm ups, group presentations

Self-management: homework is always available but is not checked for completion. Homework and notes can be used for IB hwk quizzes

Students will research other patterns within Pascal's triangle and present to class

<b>Language and learning</b> <i>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 <a href="#">the guide</a>.</i>	<b>TOK connections</b> <i>Check the boxes for any explicit TOK connections made during the unit</i>	<b>CAS connections</b> <i>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.</i>
<input checked="" type="checkbox"/> Activating background knowledge <input checked="" type="checkbox"/> Scaffolding for new learning <input checked="" type="checkbox"/> Acquisition of new learning through practice <input checked="" type="checkbox"/> Demonstrating proficiency  <b>Details:</b> Students must utilize background knowledge of content vocabulary from Algebra 2 to complete many of the concepts in Topic 1. New learning is scaffolded through progression practice. Topic 1 will build new vocabulary through exploration and practice.	<input type="checkbox"/> Personal and shared knowledge <input type="checkbox"/> Ways of knowing <input checked="" type="checkbox"/> Areas of knowledge <input type="checkbox"/> The knowledge framework  <b>Details:</b> Students will consider the following TOK question in pairs: How have notable individuals shaped the development of mathematics as an area of knowledge? Consider Pascal and "his" triangle.	<input checked="" type="checkbox"/> Creativity <input type="checkbox"/> Activity <input type="checkbox"/> Service  <b>Details:</b> Students have the opportunity to create their own application problems using arithmetic or geometric sequences. Students are encouraged to use examples from their own lives or interests to write the explicit and/or recursive definitions. Students will present these to their classmates.
<b>Resources</b> <i>List and attach (if applicable) any resources used in this unit</i>		
<b>Resources include:</b> --IB Thinking Platform --IB Resources ( <a href="http://www.ibo.org">www.ibo.org</a> ) --IB QuestionBank --Teacher guided notes		