

HPISD Curriculum: Pre Calculus Pre-AP

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Title	Estimated Duration	6 Weeks					
Unit 13: Series and Sequences	8 days	1	2	3	4	5	6
Unit Overview							
Series and Sequences							
Generalizations/Enduring Understandings							
The student will understand that:	<ul style="list-style-type: none"> Three categories of sequences we study are arithmetic, geometric, and other patterns. Two representations of sequences are implicit formulas and recursive formulas. Series are the process of summing a specific number of terms of a sequence. 						
Concepts	Guiding/Essential Questions						
<ul style="list-style-type: none"> Sequences Series 	<ul style="list-style-type: none"> What are similarities and differences between arithmetic, geometric and other sequence patterns? What are the benefits of each type of sequence formula? What techniques can be used to find a series? How can sequences and series be used to solve real world problems? 						
Learning Targets							
<ul style="list-style-type: none"> Students will select and apply the appropriate techniques for representing the three categories of sequences. Students will select and apply the appropriate techniques for finding series. 							
Formative Assessments				Summative Assessments			

TEKS:	Processes and Skills: What students should be able to DO	Facts: What students should KNOW
<p>Evaluate finite sums and geometric series when possible written in sigma notation. P.5.A</p> <p>Represent arithmetic sequences and geometric sequences using recursive formulas. P.5.B</p> <p>Calculate the nth term and the nth partial sum of an arithmetic series in mathematical and real-world problems P.5.C</p> <p>Represent arithmetic series and geometric series using sigma notation. P.5.D</p> <p>Calculate the nth term of a geometric series, the nth partial sum of a geometric series, and sum of an infinite geometric series when it exists. P.5.E</p> <p>Apply Binomial Theorem for the expansion of $(a+b)^n$ in powers of a and b for a positive integer n, where a and b are any numbers. P.5.F</p>	<ul style="list-style-type: none"> • Determine the type of sequence and apply the appropriate geometric or arithmetic formula. If the sequence is neither geometric or arithmetic, develop the formula for each. • Use sequence and series to solve real world problems. 	<ul style="list-style-type: none"> • The distinguishing characteristic of an arithmetic sequence is the common difference (the difference between each term is equal). • The distinguishing characteristic of a geometric sequence is the common ratio (the ratio between each term is equal). • The sum of an infinite series converges if the absolute value of the common ratio is less than one, it diverges in all other cases.
Topics		
Series and Sequences		
Language of Instruction		
converge diverge explicit definition	infinite series limit of a sequence partial sums	recursive definition
State Assessment Connections		National Assessment Connections
Resources		