

IBMYP A2T UNIT 7- SEQUENCES & SERIES

FYI: All grades for Unit 7 will be on the 4th Quarter!

HOMEWORK WORKSHEET POLICY: In order to receive a 3, you must attempt each problem & FULLY correct in a **RED** pen.

IXL QUIZ POLICY: If you choose to do an IXL as a quiz grade, you must write the **IXL number & final score** with detailed work for at least 10 problems in order for the quiz grade to count! You have until the end of the unit to turn these in for a grade.

| DATE | OBJECTIVES | | HOMEWORK | GRADE |
|--|---|-----------------------------------|---|---------|
| Thu/Fri, March 14/15 Day 00 | Test on Unit 6 Sequences as Functions | | DESMOS Before Activity posted in Schoology @1 Day 00 Introduction to Sequences WS @2 | — 3 |
| L. Target? | Emoji | What Questions do you still have? | What were your AHA Moments? | |
| Mon/Tue, March 18/19 Day 01 | Arithmetic Sequences & Series | | Day 01 Arithmetic Sequences & Series Practice DESMOS Phase 3 due next block! See Schoology for details | — 3 |
| L. Target? | Emoji | What Questions do you still have? | What were your AHA Moments? | |
| Wed/Thu, March 20/21 Day 02 | Summation Notation Geometric Sequences & Series | | Day 02 Geometric Sequences & Series Practice | — 3 |
| L. Target? | Emoji | What Questions do you still have? | What were your AHA Moments? | |
| Fri/Mon, March 22/25 Day 03 | Infinite Geometric Series Recursion and Iteration | | Day 03 Recursively Defined Sequences | — 3 |
| | | | Day 03 Summation & Sigma Notation Review | — 3 |
| L. Target? | Emoji | What Questions do you still have? | What were your AHA Moments? | |
| Tue/Wed, March 26/27 Day 04 | Unit 7 Test Review | | Day 04 Unit 7 Test Review Worksheet | — 3 |
| L. Target? | Emoji | What Questions do you still have? | What were your AHA Moments? | |
| Thu/Mon, Mar 28/Apr 1 Day 05 | Test on Unit 7 <i>Thursday, March 28: End of 3rd Quarter</i> <i>Friday, March 29 is a Staff Day</i> <i>Monday, April 1: 1st day of the 4th Quarter</i> | | TOTAL POINTS: | — 18 |

Unit 7 Learning Targets

| | |
|--------------------------|---|
| Learning Target 1 | I can identify, mathematically define, and graph arithmetic, geometric, and infinite geometric sequences and series, generalize patterns in a sequence using explicit and recursive formulas. |
| Learning Target 2 | I can find various terms and components of a sequence or series using the appropriate given formulas. |
| Learning Target 3 | I can find the sum of a series, including an infinite geometric series, using the appropriate given formulas, and I can use sigma notation to define or interpret a series. |
| Learning Target 4 | I can apply the properties of arithmetic and geometric sequences and series to solve real-life problems. |

Unit 7: Sequences and Series

UNIT 7 BIG IDEAS:

- The study of higher-level mathematics requires a detailed knowledge of **basic mathematical operations**.
- Mathematical **models** are generated from investigating real life **patterns**.
- Patterns occur naturally and can be recognized, extended, and generalized with words and symbols.
- Patterns **in nature** generate mathematical rules.

UNIT 7 ENDURING UNDERSTANDINGS:

1. Mathematical models are generated from investigating real life patterns.
2. Patterns occur naturally and can be recognized, extended, and generalized with words and symbols.

UNIT 7 ESSENTIAL QUESTIONS:

1. How is an arithmetic sequence related to a linear model?
2. How is a geometric sequence related to an exponential model?
3. Can all patterns be defined explicitly and/or recursively?

SOL Objectives (2009):

All/T.2 The student will investigate and apply the properties of arithmetic and geometric sequences and series to solve real-world problems, including writing the first n terms, finding the n^{th} term, and evaluating summation formulas. Notation will include Σ and a_n .

| NEW CONCEPTS & SKILLS FOR THIS UNIT | |
|---|---|
| <p>Know & Apply...</p> <ul style="list-style-type: none"> • The definitions of: recursion, iteration, recursive formula vs. explicit formula, sequence, arithmetic sequence, geometric sequence, common difference, common ratio, linear, exponential, arithmetic mean and series, geometric mean and series, infinite geometric series. • Identify a sequence or series as arithmetic, geometric or neither. • An arithmetic sequence generates a recursive formula that is linear. • A geometric sequence generates a recursive formula that is exponential. • The formulas: n^{th} term of an arithmetic sequence, n^{th} term of a geometric sequence, sum of an arithmetic series, sum of a geometric series. • How to interpret sigma notation. • How to apply sequences and series to problem solving. • A composition of two functions IS using the range of one function as the domain of another function. | <p>be able to...</p> <ul style="list-style-type: none"> • Identify a sequence. (<i>arithmetic, geometric or other</i>) • Graph a sequence. • Find the common difference or ratio of a sequence. • Find the n^{th} term of a sequence. • Write a recursive definition to fit a specific sequence pattern. • Calculate the common difference or ratio, a particular term, or the number of terms. • Generate the terms of a sequence or series. • Use the appropriate formula to calculate a particular term, the common difference or ratio, the number of terms, or the sum of a series. • Expand a series given sigma notation and write sigma notation given an expanded series. • Find iterations of a polynomial. Connect this to composition of functions. • Find the sum of an infinite geometric series. |
| PRESKILLS FOR THIS UNIT ... w/o the calculator | |
| <p>Know & Apply...</p> <ul style="list-style-type: none"> • <u>Multiplication IS repeated addition!</u> Hence... the slope of line... • <u>Exponentiation IS repeated multiplication!</u> Hence...think of the "base"... • How to write the equation of a line using slope-intercept form, standard form, and point-slope form. • Order of operations! Operations with fractions! Exponents, etc! PEMDAS & SADMEP! | <p>be able to...</p> <ul style="list-style-type: none"> • Recognize, write the equation for and graph a linear model in all 3 forms. • Graph an exponential function. • Solve an exponential equation. • Simplify an expression with exponents, fractions. • Find the composition of two functions. |