

# 11.1 IB Math - Unit 7 Sequences and Series

Bronx Early College Academy

Christopher J. Huson PhD

18-28 March 2019

7.1 Introduction and definitions Monday 18 March

7.2 Deltamath recursive notation practice, Tuesday 19 March

7.3 Geometric sequences, Wednesday 20 March

7.4 Arithmetic series, Thursday 21 March

7.5 Geometric series, Monday 25 March

7.6 Geogebra Fibonacci sequence, Tuesday 26 March

7.7 Geogebra Fibonacci sequence, Thursday 28 March

7.8 Geogebra Fibonacci sequence, Monday 1 April

7.9 Free write Fibonacci sequence, Wednesday 3 April

7.10 Convergent (infinite) series, Thursday 4 April

7.11 Applications & exponential growth, Monday 8 April

7.12 Applications & exponential growth, Tuesday 9 April

7.13 Applications & exponential growth, Wednesday 10 April

7.14 Binomial expansion, Pascal's triangle Thursday 11 April

7.15 Binomial expansion, Pascal's triangle Monday 15 April

## GQ: How do we work with sequences?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model situations

7.1 Monday 18 March

Do Now: Complete Investigation - *Saving Money* p. 162

Lesson: Arithmetic sequences, recursion, definitions p.161-6

Homework: Exercises 6A (a & b only) p. 164, 6B p. 166

## GQ: How do we use recursive notation?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model situations

7.2 Tuesday 19 March

Deltamath probability practice

Homework: Complete Deltamath exercises

## GQ: How do we model compound growth?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model situations

7.3 Wednesday 20 March

Do Now: Exercise 6C p. 167

Lesson: Geometric sequences, Sigma notation p.167-171

Homework: Exercises 6D, 6E, 6F (odds only) p. 168, 169, 171

## GQ: How do we calculate the sum of a sequence?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model situations

7.4 Thursday 21 March

Do Now: Exercise 6E #4, #6 p. 169-170

Lesson: Arithmetic series, Sigma notation p.167-171

Homework: Exercises 6G, 6H (odds only) p. 173-5

## GQ: How do we calculate the sum of a sequence?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model situations

7.5 Monday 25 March

Do Now: Review exercise #1, #2a, 2b, #3 p. 189

Lesson: Geometric series p. 175-7

Homework: Exercises 6I, 6J (a, c only) p. 176, 178

## GQ: How do we depict the Fibonacci sequence geometrically?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model situations

7.6 Tuesday 26 March

### Do Now: Find an example of the Golden Mean

1. Measure three distances: from the floor to your belly button ( $b$ ), from your belly button to the top of your head ( $a$ ), & from the floor to the top of your head ( $a + b$ ). (they should add up)
2. Compute the following two ratios:  $\frac{a}{b}$  and  $\frac{b}{a+b}$
3. Are the two ratios equal?
4. Solve for  $\frac{a}{b}$ , such that  $\frac{a}{b} = \frac{b}{a+b}$

Lesson: Geogebra construction of the Fibonacci spiral

Homework: Complete a project paper. (good luck on the SAT tomorrow)



## GQ: How do we depict the Fibonacci sequence?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model 7.7

Thursday 28 March

### Exploration: Fibonacci Spiral project

1. Do Now: solve for  $\frac{a}{b}$ , such that  $\frac{a}{b} = \frac{a+b}{b}$
2. Read paper: math hacks, search online for images of the Golden Mean and Fibonacci Sequence

Lesson: MLA citations and references, table captions

Homework: Complete the project paper. Store all files in Dropbox folder. Email a final pdf to me (filename: lastname-projectname.pdf)

## GQ: How do we depict the Fibonacci sequence?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model 7.8

Monday 1 April

Do Now: Geometric sequence & series handout

Lesson: Using Excel to compute a sequence, series, & ratios

Homework: Complete the project paper. Store all files in Dropbox folder. Email a final pdf to me (filename: lastname-projectname.pdf)

## GQ: How do we depict the Fibonacci sequence?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model 7.9

Wednesday 3 April

Do Now: Geometric sequence & series handout

Lesson: Spend the period writing, using a laptop computer

Homework: Complete the project paper. Store all files in Dropbox folder. Email a final pdf to me (filename: lastname-projectname.pdf)

## GQ: How do we sum an infinite number of terms?

CCSS: HSF.BF.A.2 Write arithmetic and geometric sequences, use them to model situations

7.10 Thursday 4 April

Do Now: IB sequences & series examples

Lesson: 6.7 Convergence of infinite geometric series p. 178-181  
Excel modeling of the ratio of Fibonacci sequence terms

Homework: Problem set of Regents exponential function questions

## GQ: How do we model situations involving sequences?

CCSS: HSF.BF.A.2 Write arithmetic & geometric sequences, use them to model situations

7.11 Monday 8 April

Do Now: IB sequences & series handout (10 minutes)

Homework review

Lesson: 6.8 Applications of geometric and arithmetic patterns  
p. 181-183

Homework: Exercises 6L p. 182-3

## GQ: How do we model situations involving sequences?

CCSS: HSF.BF.A.2 Write arithmetic & geometric sequences, use them to model situations

7.12 Tuesday 9 April

Do Now: Deltamath practice problems

Homework review

Lesson: 6.8 Applications of geometric and arithmetic patterns  
p. 181-183

Homework: Complete Deltamath assignment

## GQ: How do we model situations involving sequences?

CCSS: HSF.BF.A.2 Write arithmetic & geometric sequences, use them to model situations

7.13 Wednesday 10 April

Do Now: IB sequences & series handout (10 minutes)

Homework review

Lesson: 6.8 Applications of geometric and arithmetic patterns  
p. 181-183

Homework: Exercises 6L p. 182-3

## GQ: How do we model situations involving sequences?

CCSS: HSF.BF.A.2 Write arithmetic & geometric sequences, use them to model situations

7.14 Thursday 11 April

Do Now: IB sequences & series handout (10 minutes)

Homework review

Lesson: 6.9 Binomial expansion, Pascal's triangle  
p. 184-188

Homework: Exercises 6O p. 188



## GQ: How do we model situations involving sequences?

CCSS: HSF.BF.A.2 Write arithmetic & geometric sequences, use them to model situations

7.15 Monday 15 April

### Do Now: Review Exercise p. 189

1. Start with #4a. Solve it two ways: intuitively & with the formula.
2. Go back to #1, continue with 2-5.

Homework review

Lesson: 6.9 Binomial expansion, Pascal's triangle  
p. 184-188

Homework: Exam-style questions p. 189-190 (If you haven't done them, Exercises 6O p. 188)