8/30/2021 near Mather house

Lecture 0

Welcome to Math
1B, Fall 2021
Section **Oliver**
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SC 432

CAs: **Brandon   Emmanuel
      Calderon   Ramirez**

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Oliver, Brendan, Emmanuel

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In the form of a quizz

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Part I

Hello!

knill@math.harvard.edu
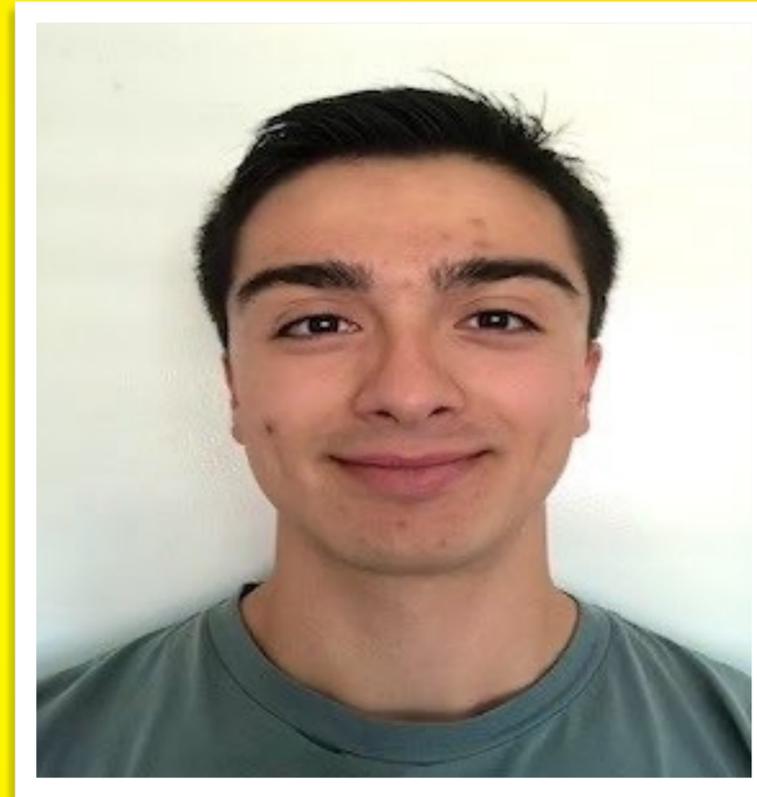
https://www.math.harvard.edu/~knill

You can call
me Oliver

Hello!

Course assistants

Brandon
Calderon

brandoncalderon
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Emmanuel
Ramirez

eramirez
@college

Birthdays

January

|			
1	1904	Satyendra Bose	Bose condensation
2	1822	Rudolf Clausius	dQ=dU+dW thermodyamics
3	1777	Louis Poinsot	Rigid body motion
4	1643	Isaac Newton	Mechanics Calculus
5	1838	Camille Jordan	Jordan curve theorem
6	1655	Jacob Bernoulli	Coined term integral
7	1871	Emile Borel	Modern theory of calculusl
8	1942	Stephen Hawking	Hawking radiation
9	1864	Vladimir Steklov	Important appplied mathematician
10	1938	Donald Knuth	TeX typesetting
11	1707	Vincenzo Ricatti	Ricatti equation
12	1984	Gregorio Ricci	Tensor Calculus
13	1902	Karl Menger	Menger Sponge
14	1901	Alfred Tarski	Banach-Tarski paradox
15	1850	Sofia Kovalevskaya	Differential equations
16	1877	Thomas Groenwall	Groenwall inequality
17	1706	Benjamin Franklin	Magic squares
18	1856	Luigi Bianchi	Bianchi inequality
19	1879	Guido Fubini	Fubini theorem
20	1775	Andre Ampere	Ampere Law
21	1874	Rene Baire	Concept of limit
22	1880	Frigyes Riesz	Functional analysis
23	1862	David Hilbert	Hilbert curve
24	1891	Abram Besicovitch	Fractals
25	1736	Joseph Lagrange	Lagrange Multiplyer
26	1945	John Coates	Advisor of Andrew Wiles
27	1931	James Murray	Population dynamics
28	1888	Louis Mordell	Mordell equation
29	1774	Eduard Kummer	Ideal
30	1918	Heinz Rutishauser	Work on Mark I
31	1715	Giovanni Fagnano	Geometry and Calculus

You!

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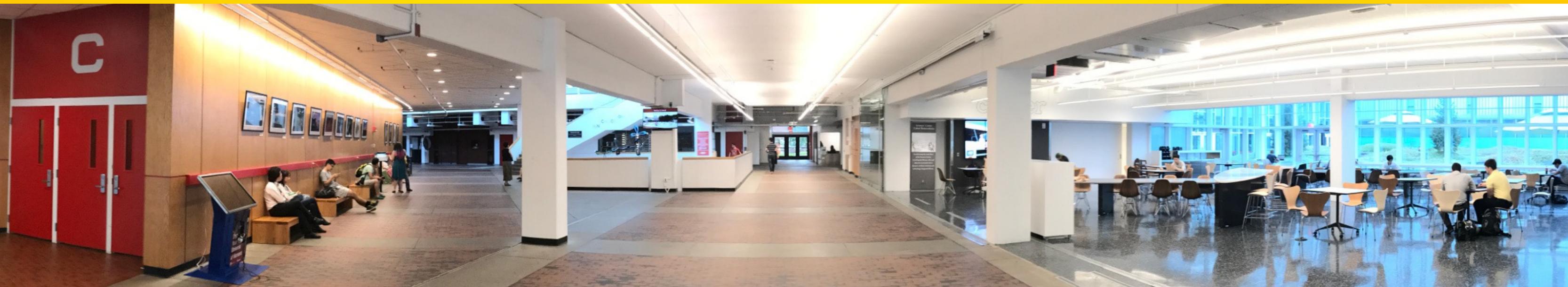https://www.math.harvard.edu/~knill

Hello!

You can call me Oliver
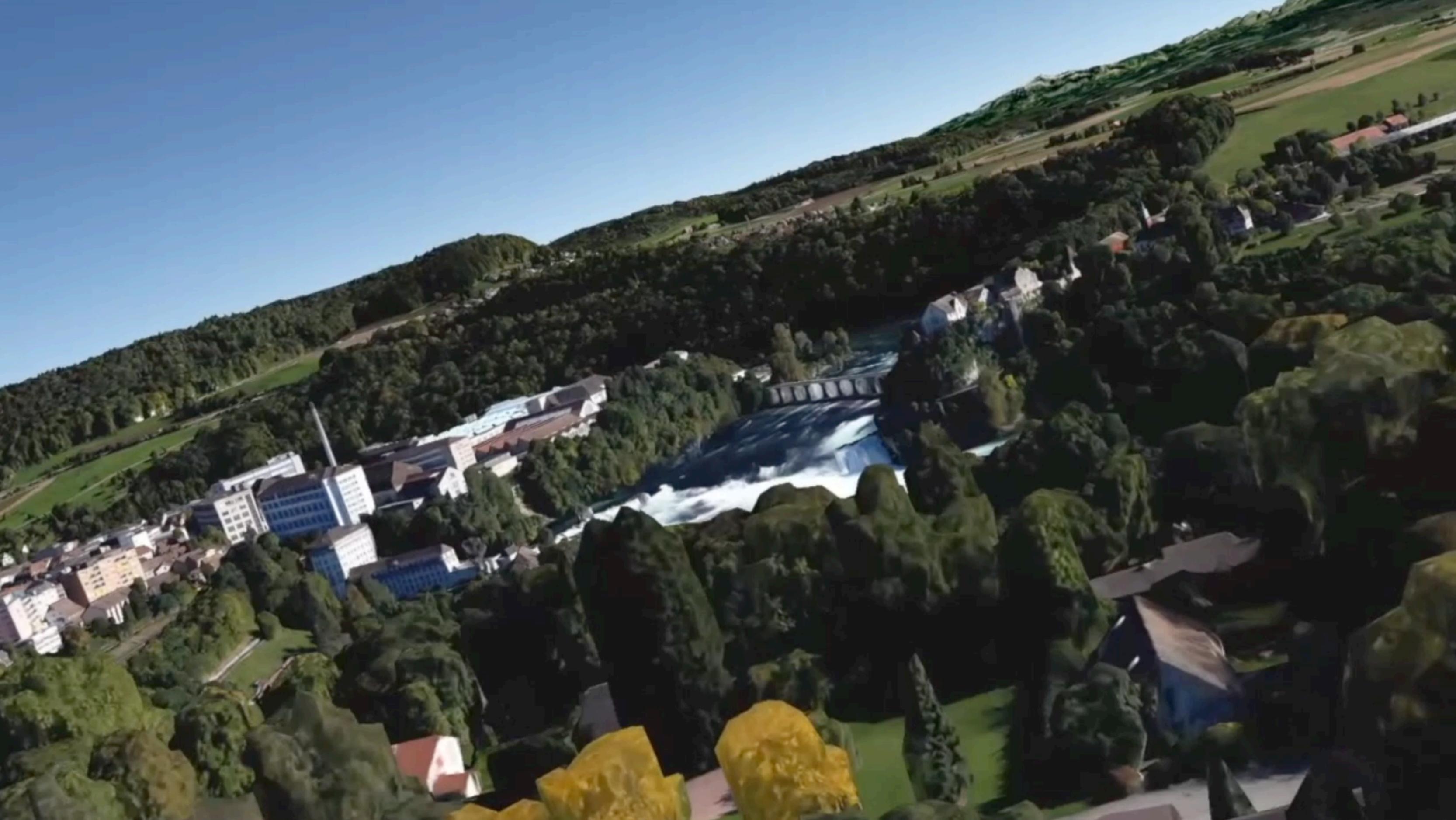
Part 2

Administrative

1. What is the MQC?

2. What are the times?

MQC in Basement of Memorial Hall, 2002

One time it has been in the
entrance to the science center
Now it is in B10

3. What is QRD?

4. First project topic?

5.Which time are HW due?

6.When is HW 0 due?

7. OH of Oliver when?

8. OH of Oliver where?

Math E320 2021 — 10 Ciphers

	① Polybius Square	② Scytale	③ Caesar Cipher	④ Trithemius Cipher	⑤ Vigenère Cipher
Name	Polybius Square	Scytale	Caesar Cipher	Trithemius Cipher	Vigenère Cipher
Origin	300 BC Cleoxenus + Democleidus	700 BC Archilochus	70 BC Caesar	1508 Johannes Trithemius	1553 Giovanno Bellaso
Kind	Symbols Codes	Physical rearrangement	Substitution	Polyalphabetic Tabula recta	Polyalphabetic key word
Illustration	ABCDE / FGHIK / LMNOP / QRSTU / VWXYZ	HARV ARDU NIVE RSIT / HANRARISRDVIVET	ABCDEFG... ↓ xyzABCD...	ABCDE / BCDEF / CDEFG / DEFGH... ⋮	Key: ADB / A→BCDE / B→CDEF / C→DEFG / D→EFGH

9. Sign up for OH needed?

10. Sign up for MQC needed?

11. When is the Techniques test?

12. What is the ARC?

13. Collaboration on HW possible?

14. Collaboration on Exams?

15. How many HW are dropped?

16. What are weekly problems?

17. Which major topics are in 1b?

18. Collaboration on Exams?

What is Calculus?

Study differences of data to sum up and predict the future. Differential equations are the key. And this is what we learn in this course too.

19. What do if something is not clear

20. Any questions?

Part 3

Estimation

Estimations
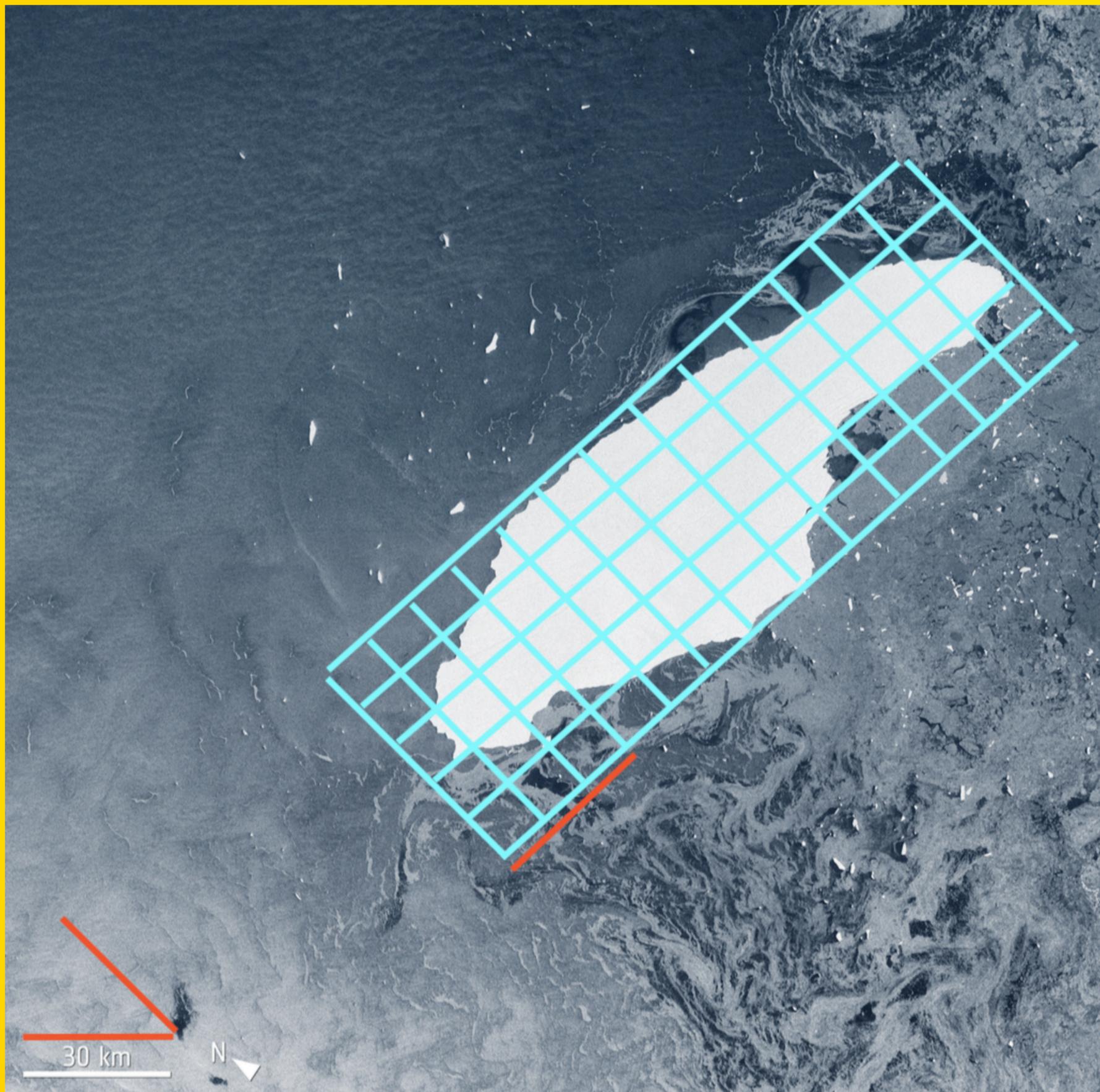
find an upper bound

find an lower bound

take the average

Distance Estimate

Any ideas?

Area Estimate

Any ideas?

from QRD

Voliume Estimate

Any ideas?

Part 4

Breaking the ice with math

THE END