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An Introduction: Why History of Mathematics? The History of Mathematics, Part 1

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Why This Course?

This course will attempt to answer the following questions.

- 1. Why do we do mathematics the way we do now?
- 2. Why is mathematics the way it is now?
- 3. Why is mathematics taught the way it is?
- 4. Why did people want to develop mathematics and who were they?
- 5. Were the people who did mathematics all white males?
- 6. Why is mathematics important in history?
- 7. What is mathematics?

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Maybe some etymology will help. **mathematics** Greek, *mathematikos*: of or related to learning

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Maybe some etymology will help.

mathematics Greek, mathematikos: of or related to learning

history Greek, *histor*: learned, wise man Greek, *historia*: narrative, finding out

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philosophy Greek, philosophia: love of learning

- **doctor** Latin, *docere*: to teach, *doctor*: teacher, learned person
- science Latin, scientia: knowledge

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philosophy Greek, philosophia: love of learning

doctor Latin, *docere*: to teach, *doctor*: teacher, learned person

science Latin, scientia: knowledge

We will come back to this question at the end of the semester.

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Why do we do mathematics the way we do now?

This goes along with the question "Why is mathematics the way it is now?"

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Why do we do mathematics the way we do now?

This goes along with the question "Why is mathematics the way it is now?"

To answer this we must define *influence*: What does it mean for something or someone to be *influential*?

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Why do we do mathematics the way we do now?

This goes along with the question "Why is mathematics the way it is now?"

To answer this we must define *influence*: What does it mean for something or someone to be *influential*?

The 100: A Ranking of the Most Influential Persons in History by Michael H. Hart, revised edition, 1992

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Why is mathematics taught the way it is?

Geometry and spherical trigonometry was central to U.S. mathematics education until the mid-20th century (geometry is still central to the rest of the world). Why? What happened in the U.S. in the mid-20th century?

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Why is mathematics taught the way it is?

- Geometry and spherical trigonometry was central to U.S. mathematics education until the mid-20th century (geometry is still central to the rest of the world). Why? What happened in the U.S. in the mid-20th century?
- What does it mean for an education to be "practical"?
- Why schools? What were schools like two thousand years ago? Who learned what and why?

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Why is mathematics taught the way it is?

- Geometry and spherical trigonometry was central to U.S. mathematics education until the mid-20th century (geometry is still central to the rest of the world). Why? What happened in the U.S. in the mid-20th century?
- What does it mean for an education to be "practical"?
- Why schools? What were schools like two thousand years ago? Who learned what and why?

We will find answers to these questions throughout the semester.

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Why is mathematics important in history?

Mathematics and religion were two parts of a whole: for millenia, math gave us the *how* and religion gave us the *why*.

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Why is mathematics important in history?

Mathematics and religion were two parts of a whole: for millenia, math gave us the *how* and religion gave us the *why*.

The relationship between mathematics and religion, mathematics and politics, and mathematics and science is understated.

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Was math developed by dead white guys?

Mathematics developed in civilizations around what we now call the Middle East, India, China, and Africa. So, no.

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Was math developed by dead white guys?

Mathematics developed in civilizations around what we now call the Middle East, India, China, and Africa. So, no. Though it is true that Europeans built upon and pushed mathematics further.

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Was math developed by dead white guys?



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Carvings



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Clay tablets



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Papyrus scrolls (the first books)



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"To publish" meant to write your book by hand and make copies by hand. Printing (as we know it) was invented in the 1400s in Europe.

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Parchment (untanned skins of sheep or goats) used to make books as we know today

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Vellum (untanned skins of calfs) also used to make books



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A Historian's View

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But these are just the materials. How does a historian make sense of a mathematical artifact?

The Ishango Bone, c. 22,000 BC





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The Ishango Bone, c. 22,000 BC



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A Historian's View

How do historian's even know what a mathematical artifact says?

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The Rosetta Stone



Discovered in 1799 in Rosetta Egypt. Same content written in hieroglyphic, demotic, Greek which allowed for translation of all ancient Egyptian.

Decree establishing the cult of the newlycrowned King Ptolemy V, 27 March 196 BC.

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Egyptian Numerals

- Two kinds:
 - hieratic or demotic, for writing on parchment and daily use
 - hieroglyphic, for carvings
- Additive notation for both
- Symbols for powers of 10

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4 Short Assessments (each 50)	200
16 Problem Sets (each 50)	800
2 Projects (each 150)	300
1 Research Paper	150
Discussion Posts (each 100)	400
Total Points	1850

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Plan on attempting at 1500 points worth of assignments.

Earn at least	and you will
this many points	receive this grade.
1300	А
1150	В
1000	С

Your points will only be visible in ItsLearning, not InfiniteCampus.

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Problem Sets

- Assigned every Monday; due the next Sunday
- Turn-in by Sunday at 10 PM, and your points earned are multiplied by 1.5
- If yours is the only correct response to an entire problem, points for that problem are doubled
- IO-school-day deadline after Sunday

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Short Assessments

- 2 after the mid-point, 2 near the end; due the next day
- Three attempts; best one counts
- These are ItsLearning tests

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Short Assessments

- 2 after the mid-point, 2 near the end; due the next day
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Research Paper

- One-page biography of a mathematician (your choice, from a list).
- Directions and list on the syllabus

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Projects

- Chosen from the textbook
- Must be approved by me; approval begins after Spring Break

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Projects

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Discussions

- Discussion posts on ItsLearning
- Rubric for evaluating your posts is on the syllabus
- Daily homework is reading selections from the textbook; the discussions will be centered on the reading. Reading assignments are on the syllabus.

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Assignments are only accepted through ItsLearning; No assignment is accepted by email or any other electronic form.

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Homework

A survey of how cultures wrote numbers; Math Through the Ages, Sketch 1

Next: The First Computations

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