

# An Introduction: Why History of Mathematics?

## The History of Mathematics, Part 1

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# Outline

Why This Course?

The First Mathematical Artifact?

Egyptian Numerals

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### Why This Course?

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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?

# What is mathematics?

Maybe some etymology will help.

**mathematics** Greek, *mathematikos*: of or related to learning

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

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

# 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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We will find answers to these questions throughout the semester.

# 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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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?

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# How do we know what the Ancients did in mathematics?

## Carvings



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# How do we know what the Ancients did in mathematics?

Clay tablets



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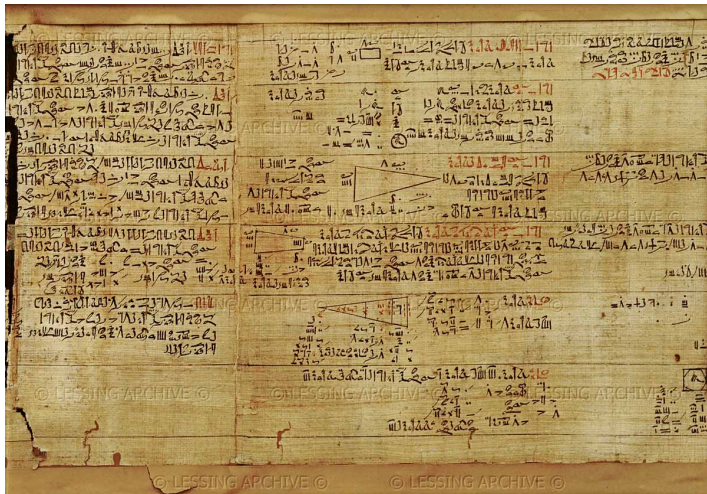
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# How do we know what the Ancients did in mathematics?

## Papyrus scrolls (the first books)



# How do we know what the Ancients did in mathematics?

“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.



# How do we know what the Ancients did in mathematics?

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



# How do we know what the Ancients did in mathematics?

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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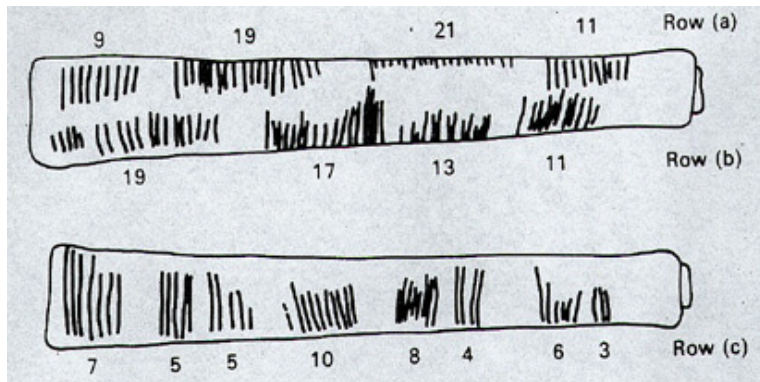
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# A Historian's View

How do historians 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 newly-crowned King Ptolemy V, 27 March 196 BC.

# Egyptian Numerals

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

## Egyptian Hieratic Numerals

1		10	∧	100	—	1000	ⲙ
2		20	∧	200	—	2000	ⲙ
3		30	∧	300	—	3000	ⲙ
4		40	∧	400	—	4000	ⲙ
5	ⲗ	50	∧	500	—	5000	ⲙ
6	ⲗ	60	∧	600	—	6000	ⲙ
7	ⲗ	70	∧	700	—	7000	ⲙ
8	≡	80	∧	800	—	8000	ⲙ
9	ⲗ	90	∧	900	—	9000	ⲙ

So, e.g, 1328 = ≡∧ⲗⲙ

# Hieroglyphic

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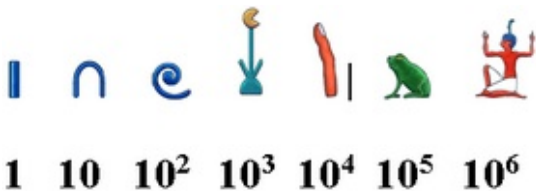
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# Hieroglyphic



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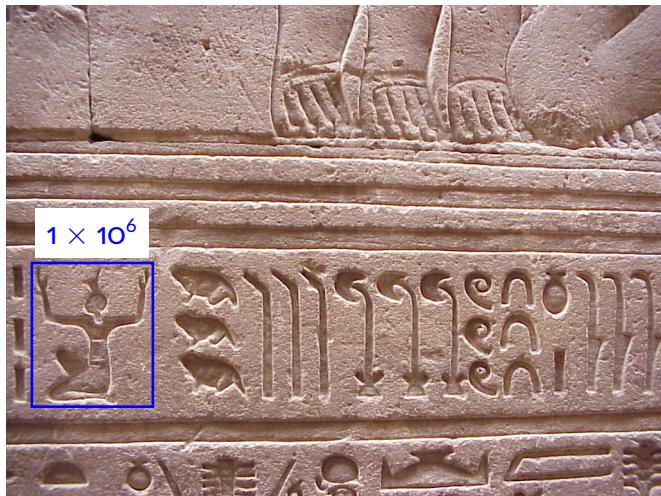
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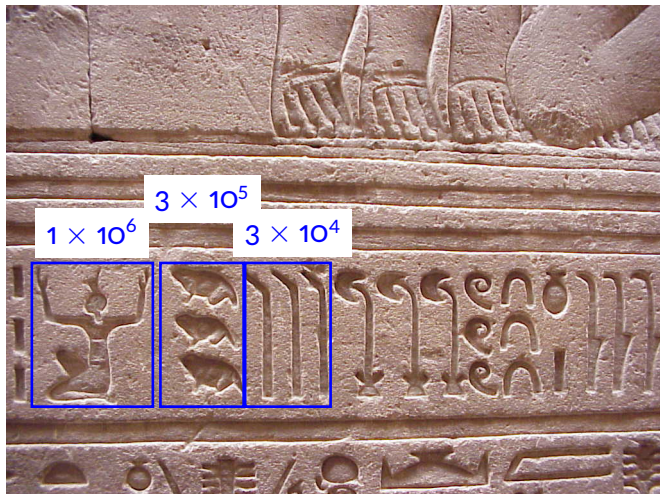
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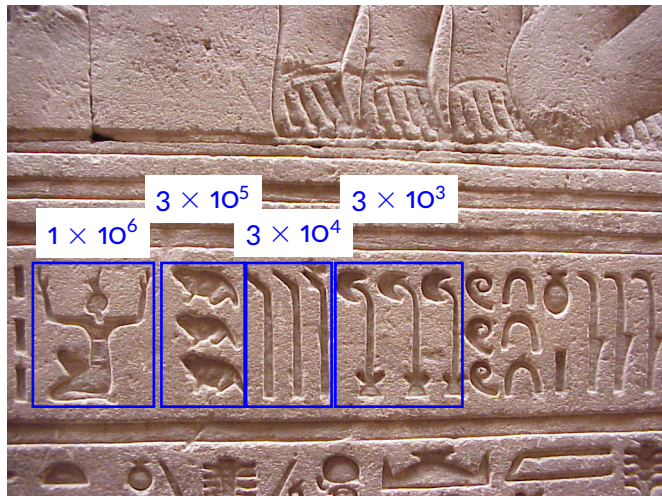
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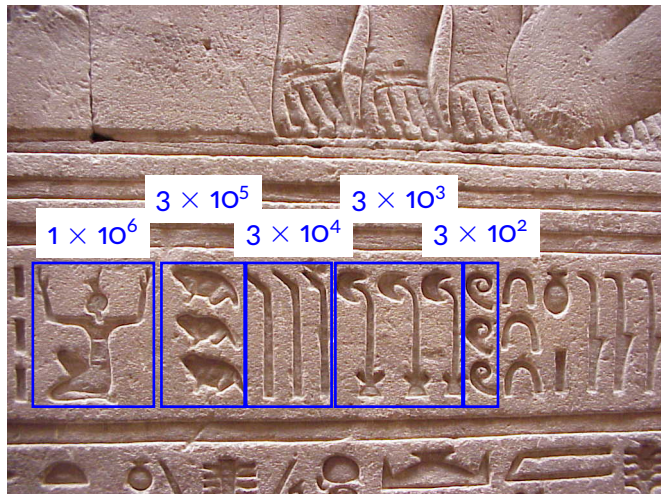
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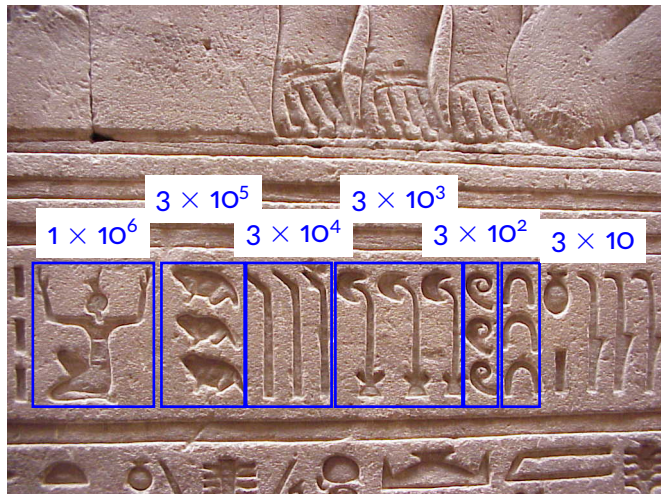
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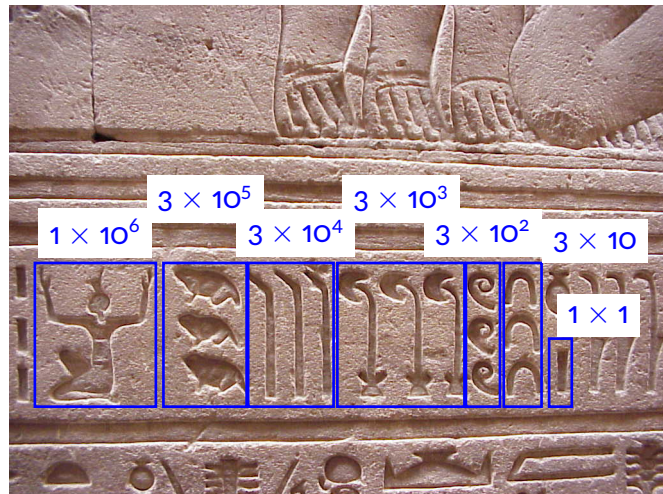
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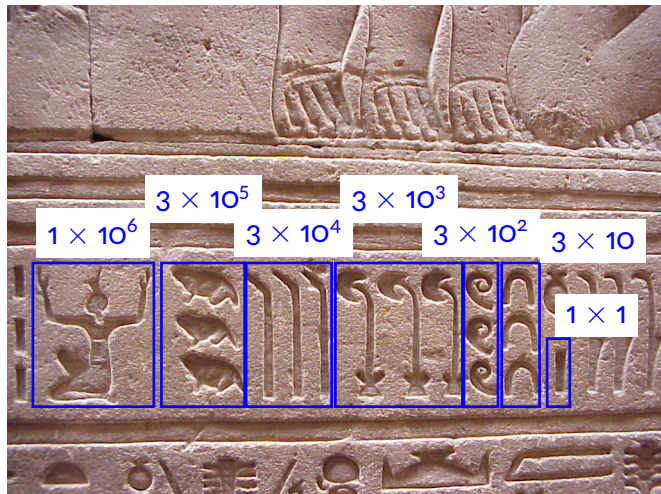
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# Hieroglyphic



This is the number 1,333,331

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# How you will be evaluated

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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

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Total Points	1850
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Plan on attempting at 1500 points worth of assignments.



# How you will be evaluated

Earn at least this many points...	...and you will receive this grade.
1300	A
1150	B
1000	C

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

# How you will be evaluated

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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
- ▶ 10-school-day deadline after Sunday

# How you will be evaluated

## 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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## Research Paper

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

# How you will be evaluated

## Projects

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

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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.

# How you will be evaluated

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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