

Numbers from Cultures

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- 1 Egyption
- 2 Mesopotamian
- 3 Greek
- 4 Chinese
- 5 Roman
- 6 Properties
- 7 Mayan
- 8 Hindu-Arabic



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Egyptian \approx 3000B.C.E.

$$\bullet \quad | = 1$$

Egyptian \approx 3000B.C.E.

- | = 1
- ∩ = 10

Egyptian \approx 3000B.C.E.

- | = 1
- ∩ = 10
- 9 = 100

Egyptian \approx 3000 B.C.E.

- | = 1

- ∩ = 10

- ρ = 100

-  = 1000



Egyptian \approx 3000 B.C.E.

- | = 1

- ∩ = 10

- ρ = 100

-  = 1000

-  = 10,000




Egyptian \approx 3000 B.C.E.

- | = 1

- ∩ = 10

- ρ = 100

-  = 1000

-  = 10,000

-  = 100,000




Egyptian \approx 3000 B.C.E.


- $| = 1$

- $\cap = 10$

- $\rho = 100$

-  = 1000

-  = 10,000

-  = 100,000

 = 1,000,000



Egyptian \approx 3000B.C.E.

So now, what does the following represent and why?



Egyptian \approx 3000B.C.E.

Would this be any different, why or why not?



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Mesopotamian \approx 2000 — 1600B.C.E.

- $\text{I} = 1$
- $\text{II} = 2$
- $\text{III} = 3$
- $\text{IIII} = 4$
- $\text{IIIII} = 5$



Mesopotamian \approx 2000 — 1600B.C.E.

- $\uparrow = 1$
- $\downarrow = 2$
- $\uparrow\downarrow = 3$
- $\downarrow\downarrow = 4$
- $\uparrow\downarrow\downarrow = 5$
- $\downarrow\downarrow\downarrow = 6$
- $\uparrow\downarrow\downarrow\downarrow = 7$
- $\downarrow\downarrow\downarrow\downarrow = 8$
- $\uparrow\downarrow\downarrow\downarrow\downarrow = 9$
- $\angle = 10$



Mesopotamian \approx 2000 — 1600B.C.E.

- $\uparrow = 1$

- $\updownarrow = 2$

- $\uparrow\downarrow = 3$

- $\updownarrow\downarrow = 4$

- $\uparrow\downarrow\downarrow = 5$

- $\updownarrow\downarrow\downarrow = 6$

- $\uparrow\downarrow\downarrow\downarrow = 7$

- $\updownarrow\downarrow\downarrow\downarrow = 8$

- $\uparrow\downarrow\downarrow\downarrow\downarrow = 9$

- $\angle = 10$

- $\sphericalangle = 20$

- $\angle\sphericalangle = 30$

- $\sphericalangle\sphericalangle = 40$

- $\angle\sphericalangle\sphericalangle = 50$

- $\uparrow = 60$



Mesopotamian \approx 2000 — 1600B.C.E.

25 or 64?

Why does

$$\{\downarrow\downarrow\downarrow\uparrow = 25$$

while

$$\uparrow \downarrow\downarrow = 64?$$

Then what should $\downarrow\uparrow\llcorner$ equal?

Mesopotamian \approx 2000 – 1600B.C.E.

2525?

The number 2525 would be written

$$\llcorner \llcorner \lrcorner \lrcorner = 2525$$

why?

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Greek \approx 400B.C.E.

- $\alpha = 1$ (*alpha*)
- β (*beta*)
- γ (*gamma*)
- δ (*delta*)
- ϵ (*epsilon*)
- ζ (*digamma*)
- ζ (*zeta*)
- η (*eta*)
- $\theta = 9$ (*theta*)



Greek \approx 400B.C.E.

- $\alpha = 1$ (*alpha*)
- β (*beta*)
- γ (*gamma*)
- δ (*delta*)
- ϵ (*epsilon*)
- ζ (*digamma*)
- ζ (*zeta*)
- η (*eta*)
- $\theta = 9$ (*theta*)
- $\iota = 10$ (*iota*)
- κ (*kappa*)
- λ (*lambda*)
- μ (*mu*)
- ν (*nu*)
- ξ (*xi*)
- \omicron (*omicron*)
- π (*pi*)
- $\rho = 90$ (*koppa*)



Greek \approx 400B.C.E.

- $\alpha = 1$ (*alpha*)
- β (*beta*)
- γ (*gamma*)
- δ (*delta*)
- ϵ (*epsilon*)
- ζ (*digamma*)
- ζ (*zeta*)
- η (*eta*)
- $\theta = 9$ (*theta*)
- $\iota = 10$ (*iota*)
- κ (*kappa*)
- λ (*lambda*)
- μ (*mu*)
- ν (*nu*)
- ξ (*xi*)
- \omicron (*omicron*)
- π (*pi*)
- $\rho = 90$ (*koppa*)
- $\rho = 100$ (*rho*)
- σ (*sigma*)
- τ (*tau*)
- υ (*upsilon*)
- ϕ (*phi*)
- χ (*chi*)
- ψ (*psi*)
- ω (*omega*)
- $\sampi = 900$ (*sampi*)



Greek \approx 400B.C.E.

It's Greek to me.

With what you know, what would be the value of

$\theta\omega\phi$?



Greek \approx 400B.C.E.

It's Greek to me.

With what you know, what would be the value of

$$\theta\omega\phi = 9 + 800 + 500 = 1309.$$



Greek \approx 400B.C.E.

It's Greek to me.

With what you know, what would be the value of

$$\theta\omega\phi = 9 + 800 + 500 = 1309.$$

Does order necessarily matter?



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Chinese \approx 200B.C.E.

1

|

—



Chinese \approx 200B.C.E.

1 2



Chinese \approx 200B.C.E.

1 2 3



Chinese \approx 200B.C.E.

1 2 3 4



Chinese \approx 200B.C.E.

1 2 3 4 5



Chinese \approx 200B.C.E.

1	2	3	4	5	6
					⊥
—	==	≡	≡	≡	⊥



Chinese \approx 200B.C.E.

1

2

3

4

5

6

7



Chinese \approx 200B.C.E.

1

2

3

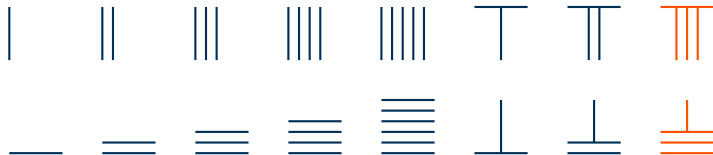
4

5

6

7

8



Chinese \approx 200B.C.E.

1

2

3

4

5

6

7

8

9



Chinese \approx 200B.C.E.

Everything in its place

Using the Chinese counting rod numbers there are

$$\text{||| } \perp$$

degrees in a circle, while six squared would be

$$\equiv \top$$

Why are they different and how do we tell them apart?



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Roman \approx 100B.C.E.

- I
- II
- III
- IV
- V

Roman \approx 100B.C.E.

- I

- II

- III

- IV

- V

- VI

- VII

- VIII

- IX

- X



Roman \approx 100B.C.E.

- I

- II

- III

- IV

- V

- VI

- VII

- VIII

- IX

- X

- L

- C

- D

- M

- \overline{X}



Roman \approx 100B.C.E.

They say it's your birthday!

If I told you that Western Connecticut State University was founded in MCMIII, then when is that?



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Properties of Number Systems

- Base
- Positional / Additive
- Zero?
- Regular Numbers?

Properties of Number Systems

- Base
- Positional / Additive
- Zero?
- Regular Numbers?



Properties of Number Systems

- Base
- Positional / Additive
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Properties of Number Systems

- Base
- Positional / Additive
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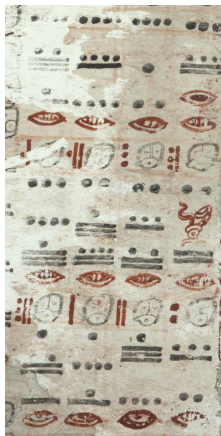
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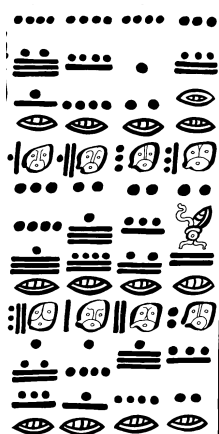
Mayan \approx 400 B.C.E.

Dresden Mayan Codex Page 24 \approx 13th Century

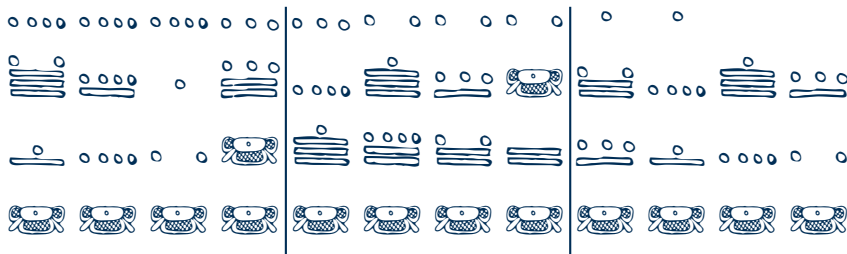


Mayan \approx 400 B.C.E.

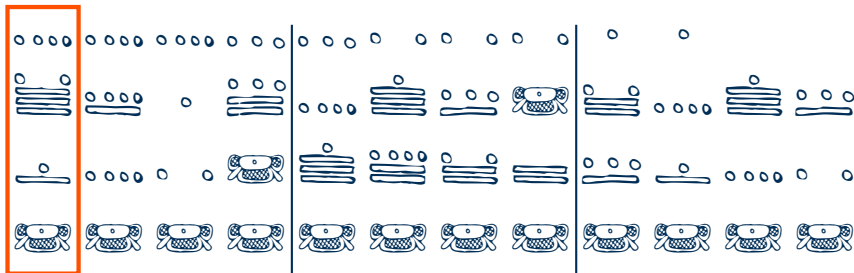
Dresden Mayan Codex Page 24 \approx 13th Century



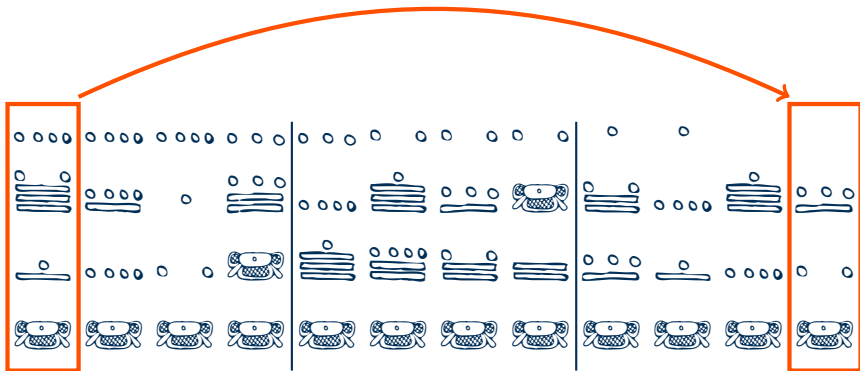
Patterns in the Numbers



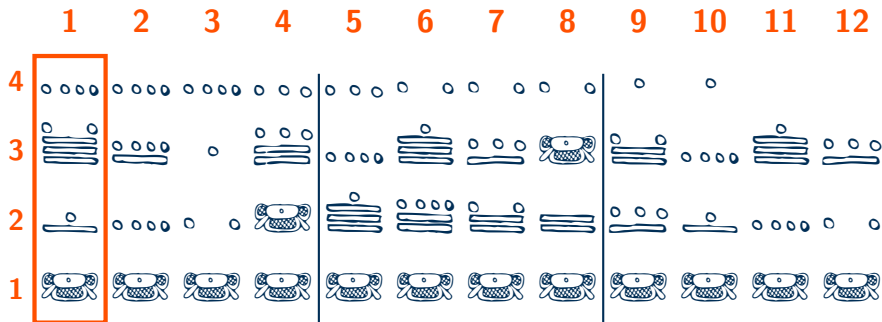
Patterns in the Numbers



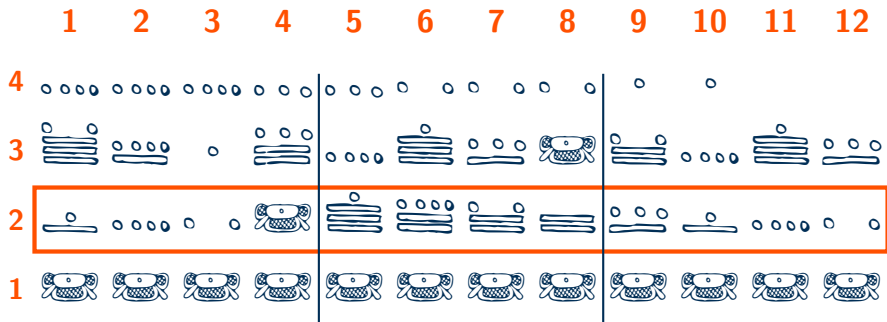
Patterns in the Numbers



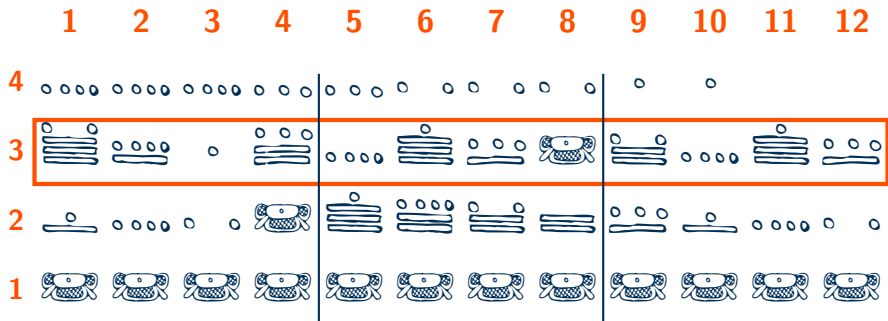
Patterns in the Numbers



Patterns in the Numbers



Patterns in the Numbers



Mayan Numerals

●  is 0

Mayan Numerals





 is 0

 is 1

Mayan Numerals

-  is 0
-  is 1
-  is 5






Mayan Numerals

-  is 0
-  is 1
-  is 5
- A  in row 3 is 18 in row 2

Mayan Numerals

-  is 0
-  is 1
-  is 5
- A  in row 3 is 18 in row 2
- A  in row 4 is 20 in row 3

Mayan Numerals

-  is 0
-  is 1
-  is 5
- A  in row 3 is 18 in row 2
- A  in row 4 is 20 in row 3
- **Positional**

Mayan Numerals

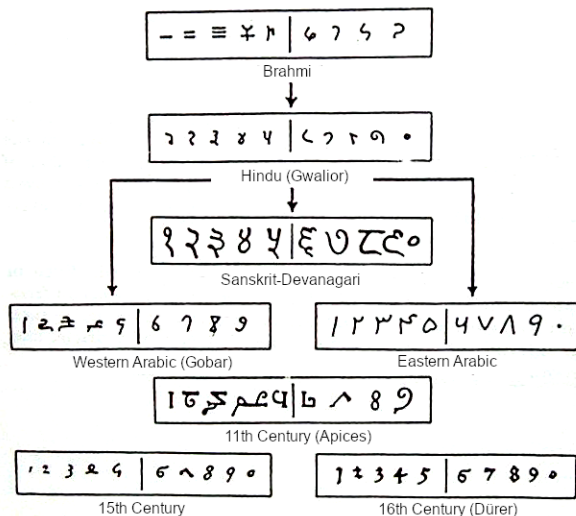
-  is 0
-  is 1
-  is 5
- A  in row 3 is 18 in row 2
- A  in row 4 is 20 in row 3
- Positional
- Roughly Base 20

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Hindu-Arabic



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