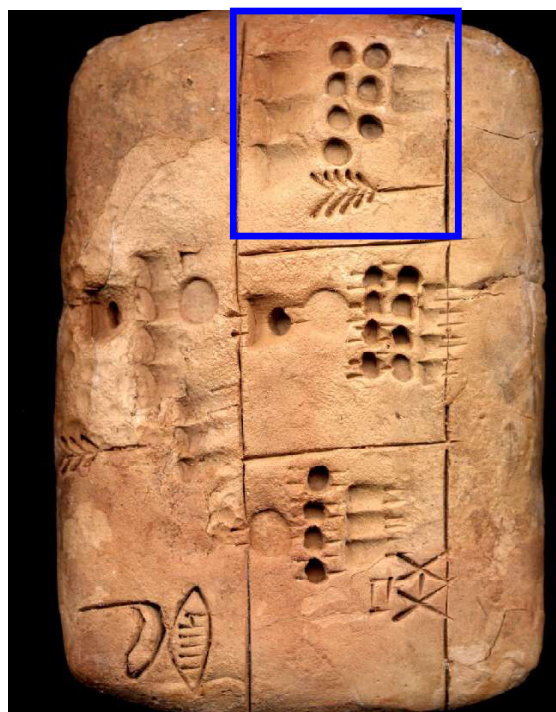


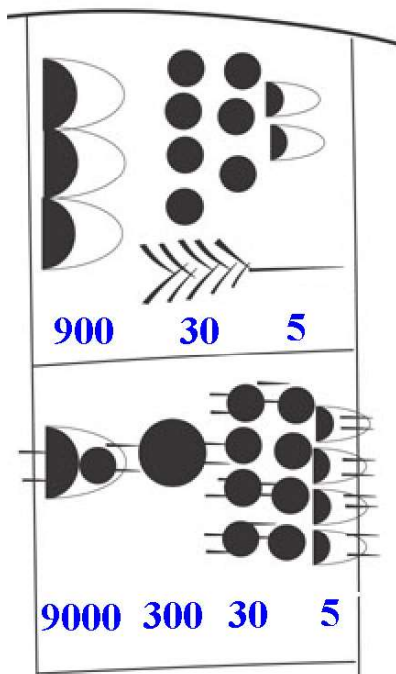
Il numero nell'amministrazione sumera.  
Le manifestazioni linguistiche di un'idea  
aritmetica.

## La quantità ...



Tavoletta amministrativa sumera

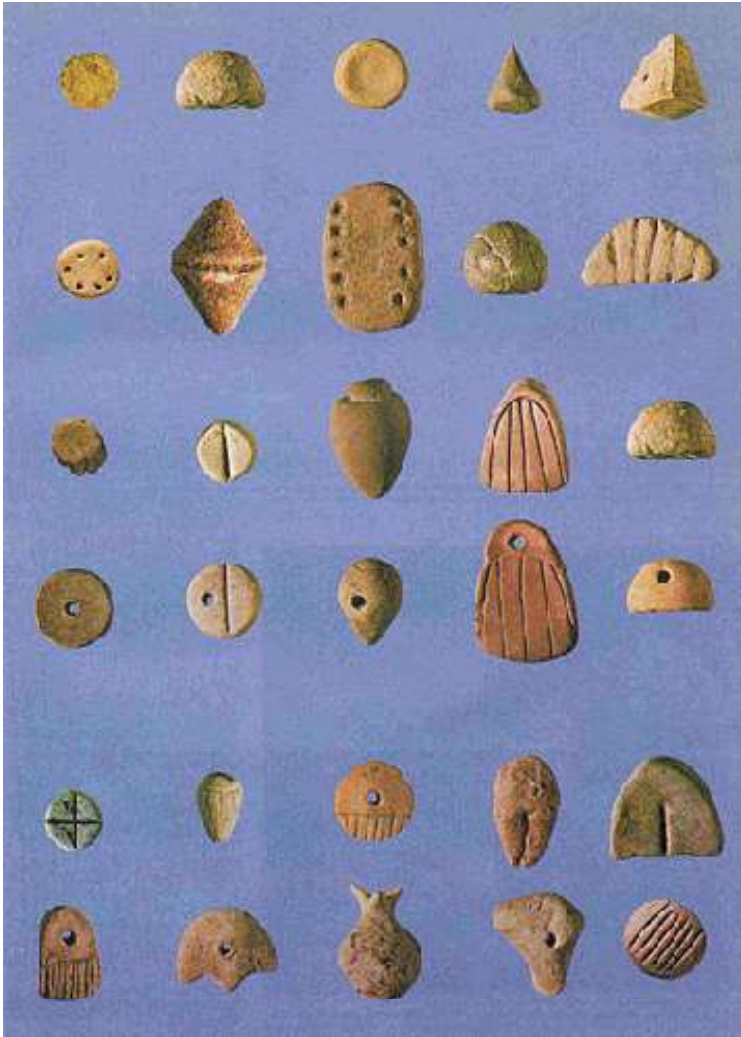
... concreta



un vestito, un lingotto, una giara d'olio, una **pecora**,  
 un alveare,                ??????,                un vestito

## Oggetti, numeri, scrittura (in Mesopotamia)

Oggetti come “simboli”



Un oggetto = una unità (un esemplare di quella specie) – rappresentazione pittografica – base della scrittura (Sumer, 8000 - 3200 a.C.)

Ogni simbolo è autonomo, all’aspetto quantitativo si aggiunge quello qualitativo, i simboli si accumulano in modo variabile per creare quantità diverse, si creano differenziazione e dinamismo, si supera la sequenzialità.



Bolla mesopotamica (involucro in argilla sigillato contenente una certa quantità di *calculi*) - uso commerciale

### Evolution from Token to Cuneiform Writing

Token	Photograph	Neo-Sumerian Old Babylonian	Neo-Assyrian	Neo-Babylonian	English
					Sheep
					Cattle
					Dog
					Metal
					Oil
					Garment
					Bricklet
					Perfume

Continuum of more abstract tokens before the advent of cuneiform writing and their possible English meanings.

Nome	Figura	Valore	Nome	Figura	Valore
<b>Cono piccolo</b>		1	<b>Cono forato</b>		600
<b>Palla piccola</b>		10	<b>Palla grande</b>		3 600
<b>Cono grande</b>		60	<b>Palla forata</b>		36 000

Bolle diverse (per forma e dimensione) per quantità diverse

Nasce il concetto di *numero* come “raggruppamento di una certa grandezza”. In simboli:



1



10



60



600

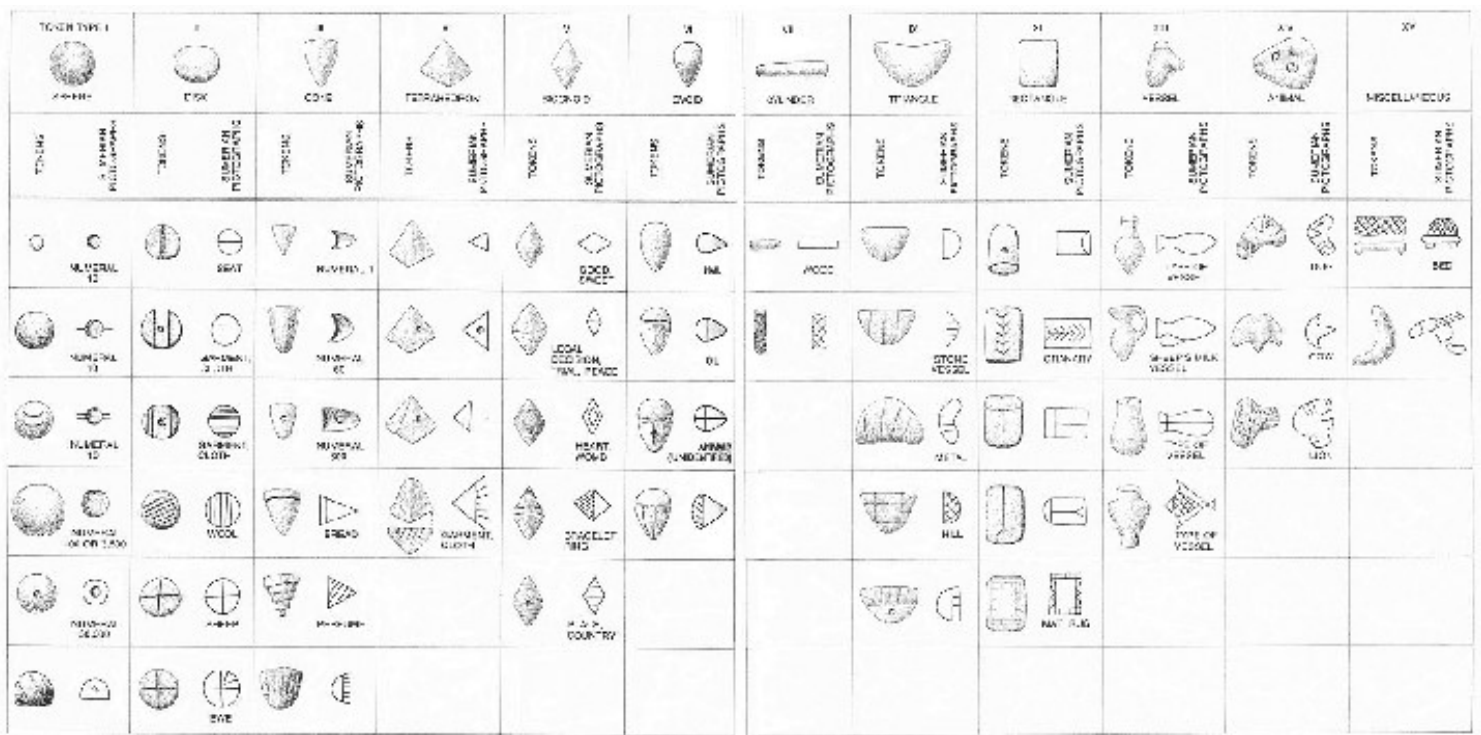


3 600



36 000





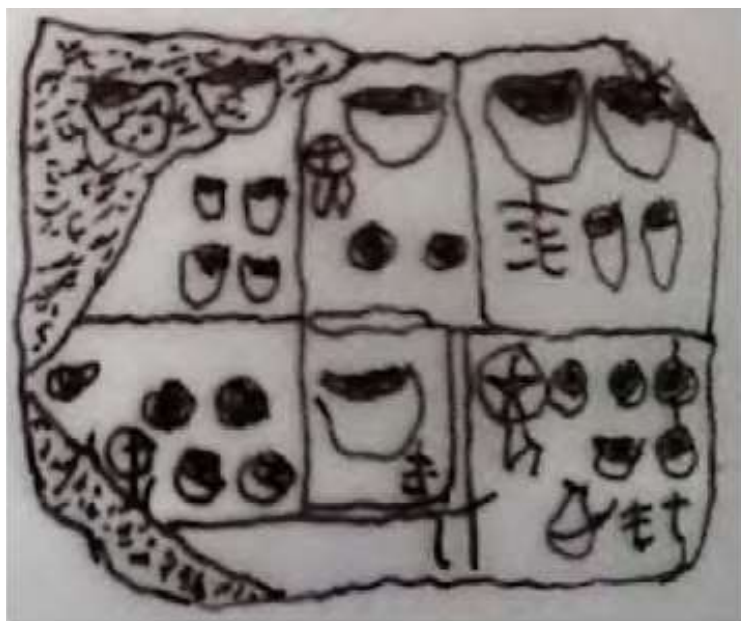
Tavolette di argilla



Rappresentazioni di inventari, di conti, di distribuzioni di razioni, ...



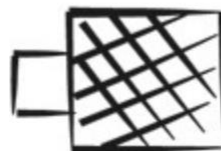
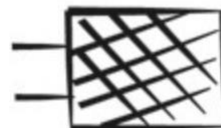
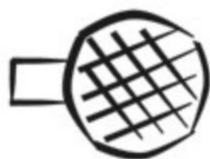
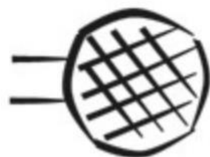
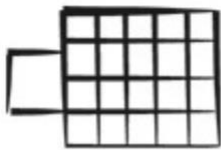
Razioni di birra



Quantità di bestiame (122 maiali, 80 capre, 41 pecore, ...)

Burmese	IPA	Transliteration	Main usage
<b>People and animals</b>			
ကောင်	[kàuN]	kaung	animals
ပါး	[pá]	pa	sacred persons (such as Buddhist monks and nuns)
ယောက်	[jauʔ]	yauk	persons (general classifier)
ရင်း	[ʃín]	shin	pairs of draught cattle
ဦး	[ʔú]	u	people, monks and nuns
<b>Other measure words</b>			
ကုံး	[kóuN]	koun	garlands, necklaces, stringed items
ကျိုက်	[tɕaiʔ]	kyaik	draughts gulped down
ကျိပ်	[tɕeiʔ]	kyeik	items in 'tens'
ခါ	[kʰà]	kha	number of times
ခု	[kʰu]	khu	items (general classifier)
ခက်	[kʰɛʔ]	khet	branches, sprays of flowers
ခင်	[kʰín]	khin	skeins of wool or cotton
ခေါင်း	[kʰáun]	khaung	skeins of yarn
ခိုင်	[kʰàin]	khaing	bunches of flowers, fruits
ခေါက်	[kʰauʔ]	khauk	trips
ခွေ	[kʰwè]	khway	rings, coils
ခွန်း	[kʰún]	khun	words
ချီ	[tɕʰi]	chi	performances or shows
ချိ	[dzó]	cho	components of a ratio
ချက်	[tɕʰɛʔ]	chet	strokes, blows, hits, points strokes of clocks, drums, gongs, etc.
ချောင်း	[tɕʰáun]	chaung	thin, long items (like pencils, sticks)
ချပ်	[tɕʰaʔ]	chat	flat items (like tables)
ခြည်	[tɕʰi]	chi	rings, bangles
စီး	[si]	si	vehicles and transport animals
စည်း	[si]	si	bundles
စင်း	[sín]	sin	long-shaped items (like arrows, boats, cars)
စောင်	[sàun]	saung	literary pieces, documents, letters, etc.
စုံ	[sòun]	soun	sets or pairs
ဆ	[sʰə]	hsa	number of times per equal amount
ဆူ	[sʰù]	hsu	sacred objects and <i>parabaik</i> (Pali manuscripts)
ဆောင်	[sʰàun]	hsaung	buildings (like houses, monasteries and royal buildings)

La tavoletta



DUB →





































































































## Evoluzione della scrittura

Dalle tacche ai pittogrammi/ideogrammi (inizialmente tridimensionali):

- seguendo l'aumento della complessità nella pratica del calcolo (sviluppo dei commerci)
- rispettando i limiti delle tecniche di scrittura (vedi, all'inizio, la prevalenza delle forme geometriche elementari)
- assecondando la necessità di comporre testi sempre più lunghi ed articolati (tavolette più grandi, vocabolario più ricco)
- conciliando le esigenze di standardizzazione e differenziazione (creare un elevato numero di simboli diversi a partire da un numero ridotto di elementi di base, con combinazioni concettuali e/o fonetiche)

	original image	90° turn	ca 2500	ca 2000	Babylonian	Assyrian	sound shape	meaning
1							an, il	sky
2							ki, ke	land
3							lu	human
4							munus	female
5							kur, mat	mountain
6							sag, šag	head
7							ka, inim	mouth
8							nig, ša	bread
9							ku	food
10							a	water
11							nag	drink
12							du	foot
13							na	fish
14							gu, gud	bull
15							ab, lid	cow
16							še	grain

## Liste e struttura



- Suddivisione matriciale
- Classificazione per genere
- Elenco puntato



## Le tavolette d'argilla e lo stilo

In origine:

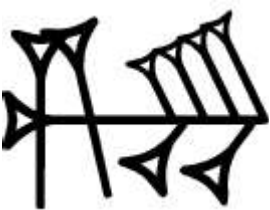
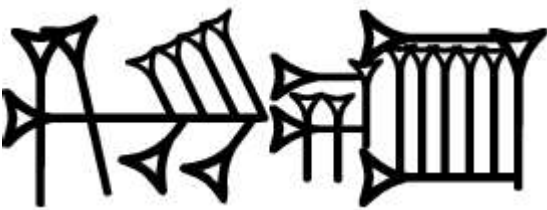


Successivamente:

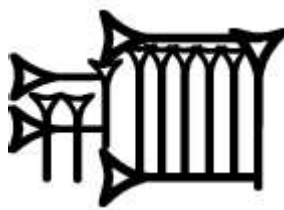


Materiale: canna di bambù, osso.

Stilo o calamo:



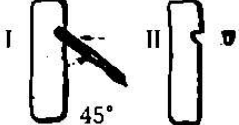

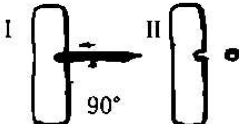

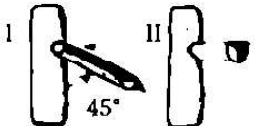

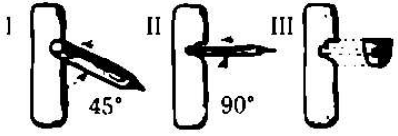

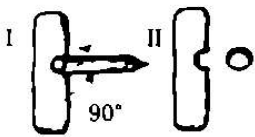

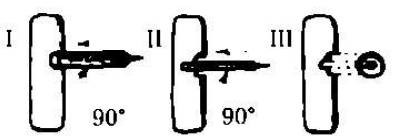

*gi* (canna)



*dub* (tavoletta)



I diversi segni "elementari" (inizialmente solo numerici) si ottenevano variando l'orientazione dello stilo (in origine, di due diversi spessori):

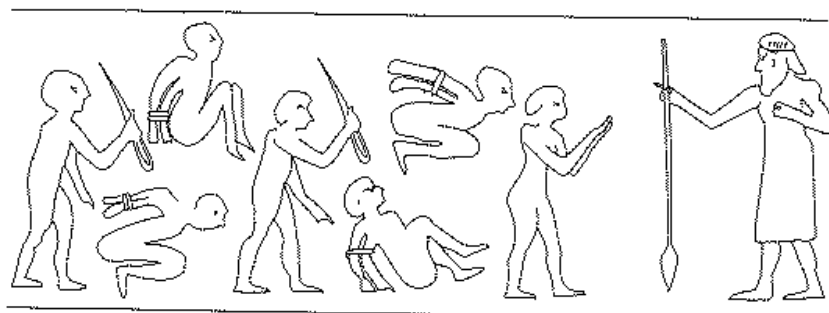
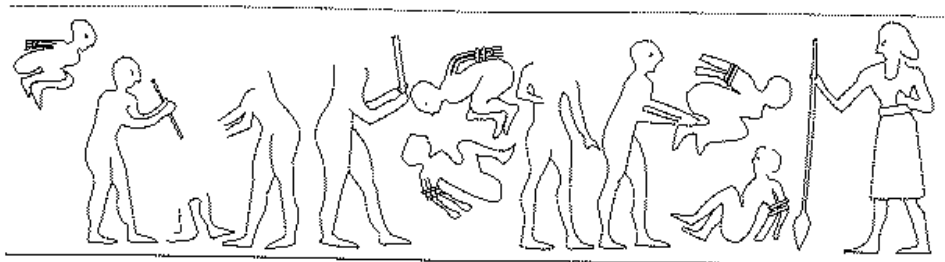
ACTION		RESULT
	Narrow stylus applied at an angle of 45°	 Small notch
	Narrow stylus applied perpendicularly	 Small circular indentation
	Wide stylus applied at an angle of 45°	 Wide notch
	(I): Wide stylus applied at 45° (II): Narrow stylus applied perpendicularly	 Wide notch with small indentation
	Wide stylus applied perpendicularly	 Large circular indentation
	(I): Wide stylus applied perpendicularly (II): Narrow calamus applied perpendicularly	 Large circular indentation with small circular indentation

Il cuneo e la testa di cuneo (*Winkelhaken*)



## La combinazione

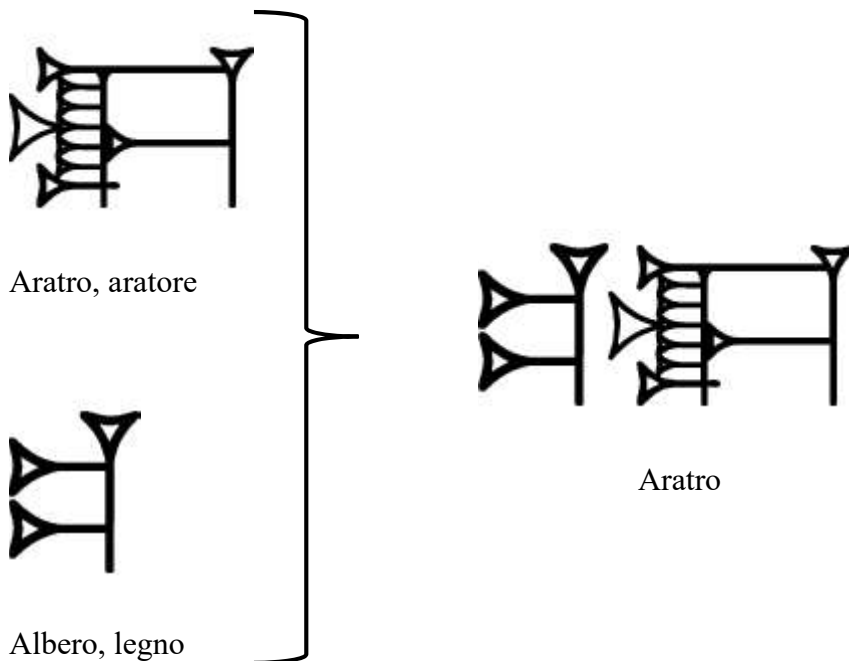
Sigilli personali:



## Pochi segni, tanti significati

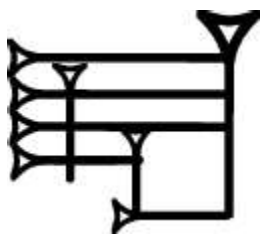
Semplificazione e moltiplicazione sono trasformazioni antitetiche. Tuttavia, possono armonizzarsi in modo da superare i limiti di entrambe.

Espansione semantica  $\longrightarrow$  Disambiguazione



L'operazione di combinazione concettuale precede la scrittura: può avvenire tramite fusione di suoni, vedi la composizione dei nomi dei primi numeri sumeri, e vedi anche:

**šudum = šu + dim**



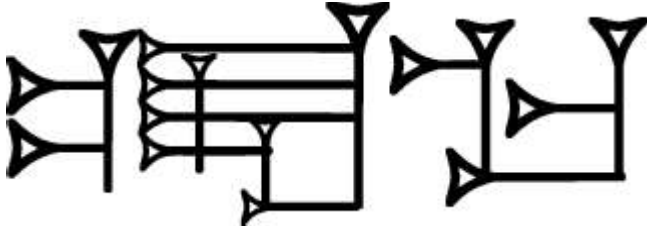
Stilizzazione di un abaco (con annesso contenitore di *calcoli*)

**contare = mano (parte) + bastone**



Il riferimento è ai *tally sticks*, usati dai pastori sumeri per tenere il conto dei capi di bestiame.

Combinazione di simboli (logogramma composto)

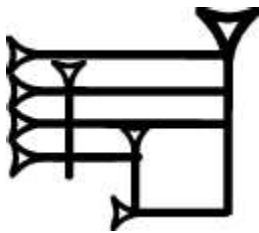


***geš-šudum-ma***

**(tally stick)**

E poi ancora:

- Estensione semantica



Amministratore della casa (del tempio)

- Disambiguazione



Contare

razione



**L'ufficiale, amministratore del tempio**



Sumerogramma SANGA (← regolo di misurazione?)

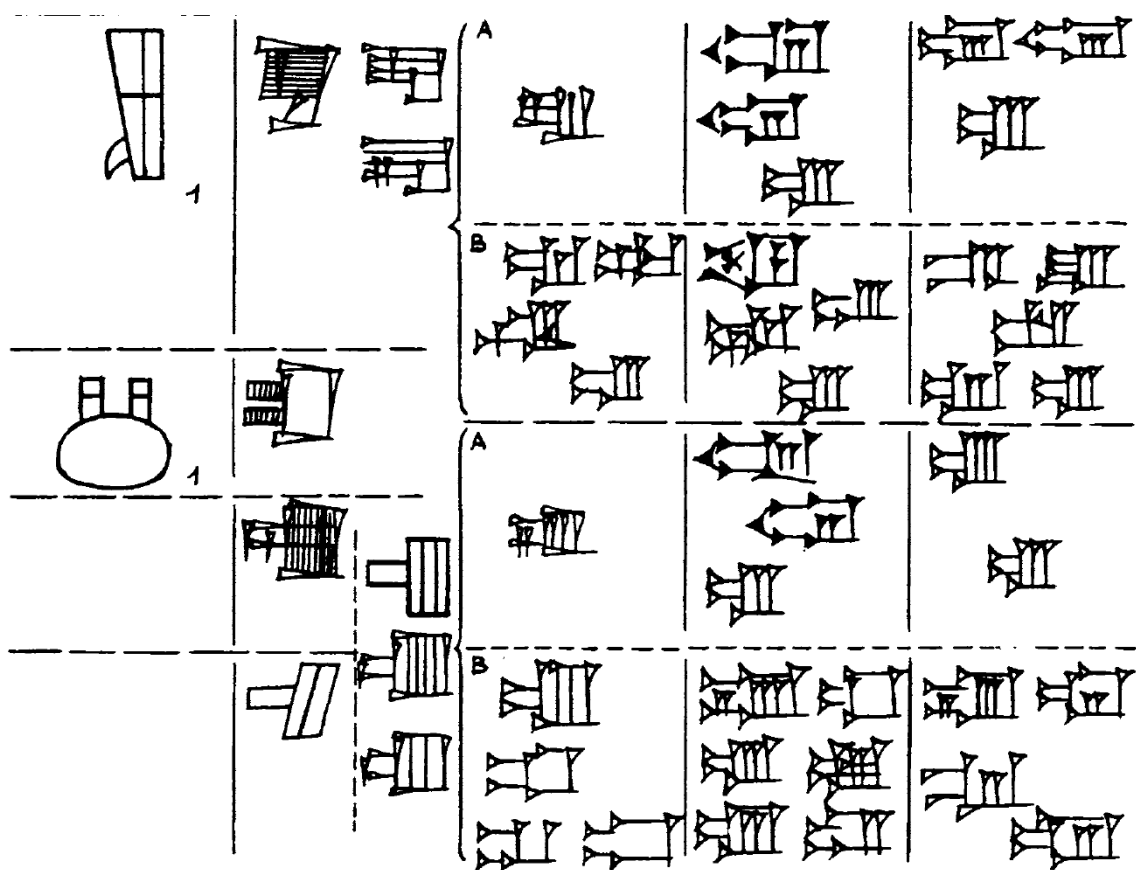


GAR.ŠID

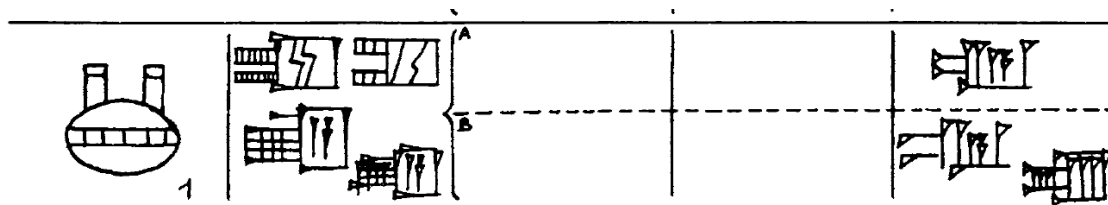


ŠID.GAR

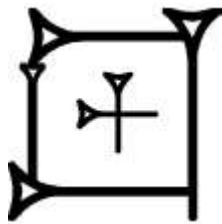
Tavoletta di calcolo  
e unità di misura



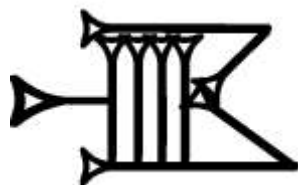
Il recipiente (PISAN) e il contabile (UMBISAG):



## Pecore e capre

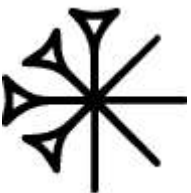


*Lu* = molto, abbondante



**nave**                      **via**  
(interpretazione mitologica)







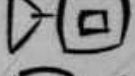

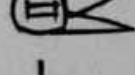

X = dieci    (cf.  )

La croce come simbolo di gruppo?

La storia della scrittura si intreccia con quella dei numeri.

Ed entrambe si intrecciano con la storia dell'umanità.

A proposito della differenziazione

	U <sub>8</sub>	ewe
	UDUNITA	ram
	UD <sub>5</sub>	nanny-goat
	MAŠNITA	billy-goat
	KIR <sub>11</sub>	female lamb
	SILANITA	male lamb
	EŠGAR	female kid
	MAŠ	male kid

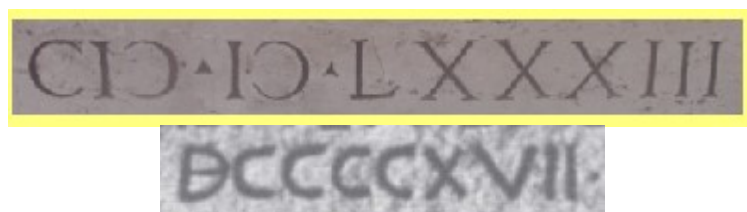
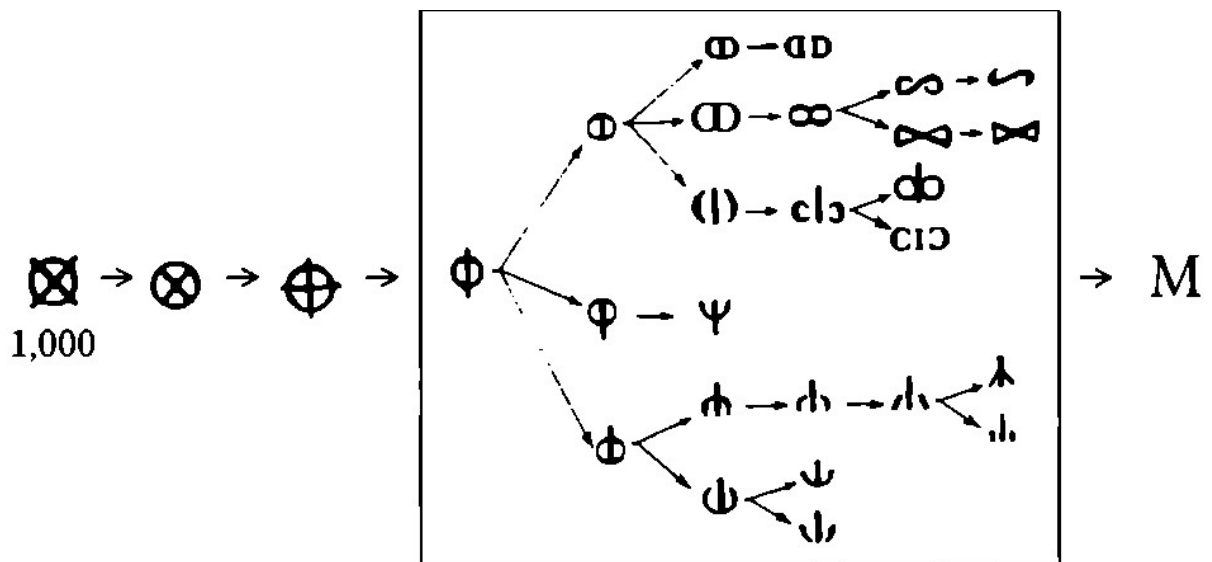


## Evoluzione della numerazione romana

I	V	X	↯	*	↯	↯
1	5	10	50	100	500	1,000

↯ → ↓ → ↓ → ⊥ → ⊥ → L  
50

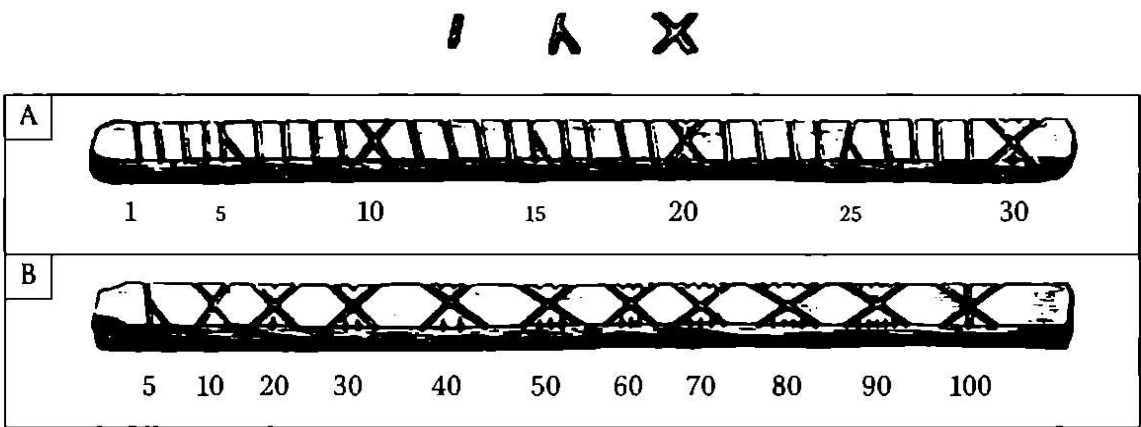
↯ → ↯ → ↯ → ↯ → D  
500



Probabile origine: numerazione etrusca

I	Λ	X	↑	Ж	C	⊕	⊖
1	5	10	50	100	500	1000	10000

Ulteriori riscontri alla "croce" come "gruppo":



*Tally sticks* dalmati

1	2	3	4	5	6	8	10
I	II	III	X	IX	IIIX	XX	?
3	233	333	2333	3	2	3	2
20	50	60	70	100	200		
1131	122	X	2333	3	2	3	2

Numerali indiani Kharoshthi (III sec. a.C.)

# Pun? Rebus-writing?

32. Il semble donc que cette herméneutique, cette procédure qui consiste à analyser les mots pour avancer dans la connaissance des choses, et dont le mécanisme est si bien démonté par notre "commentaire," a pu et dû jouer un rôle important dans la pensée et la production intellectuelle des vieux Mésopotamiens. Pourquoi?

Si l'on y réfléchit, une pareille "logique," tellement loin de la nôtre, implique un double postulat, également éloigné de notre propre optique: une conception réaliste, et du nom, c'est-à-dire du mot en tant qu'il dénomme et désigne, et de l'écrit.

Le premier point est connu de tous ceux qui ont eu affaire à la civilisation ancienne de Mésopotamie. On sait de longue date que le nom n'y était point, comme à nos propres yeux, un épiphénomène, un pur accident extrinsèque de la chose, un *flatus vocis*, simple conjonction arbitraire d'une relation de signification avec un groupement de phonèmes. Tout au contraire, ces vieilles gens s'étaient persuadés que le nom a sa source, non dans l'individu qui nomme, mais dans la chose nommée, qu'il en est une émanation inséparable, comme l'ombre portée, le calque, la traduction de sa nature: si bien qu'à leurs yeux "recevoir un nom" et exister (évidemment: selon les qualités et la présentation mises en avant par ce nom), c'était tout un.<sup>60</sup>

J. Bottéro, *Les noms de Marduk, l'écriture et la logique en Mésopotamie ancienne*, Mem. Connecticut Acad, Arts. Sci, 19 (1977)

# Pun? Rebus-writing?

*jartu*, “Koralle” (?) [oder: “Perle” (?)]; aufgespalten in: *ja* - *artu*

sum. “fünf” = *i a 2* 𒌦

*artu*, “Ast” = sum.: *p a* 𒌶

gelehrte Schreibung: 5 - *p a* = *jartu*, “Koralle” (?) [mit Hintersinn: “Fünf-Ast”]

akkadisch:

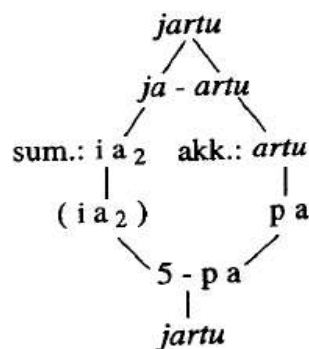
aufgespalten in:

analysiert als:

übertragen ins Sumerische:

gelehrte Schreibung:

zu lesen als:



“Koralle” 𒌦𒌶

“fünf” “Ast”

“fünf” “Ast”

“5-Ast”

“Koralle”

S. Maul, *Das Wort in Worte. Orthographie und Etymologie als hermeneutische Verfahren babylonischer Gelehrter*, in; G. W. Most (ed.). *Kritische Studien zur Philologiegeschichte*, vol. 4, 1999.



## La struttura “mista” della numerazione sumera

1	2	3	4	5	6	7	8	9	10
<i>geš</i>	<i>min</i>	<i>eš</i>	<i>limmu</i>	<i>iá</i>	<i>àš</i>	<i>imin</i>	<i>ussu</i>	<i>ilimmu</i>	<i>u</i>

10	<i>u</i>
20	<i>niš</i>
30	<i>ušu</i>
40	<i>nišmin</i> (or <i>nimin</i> or <i>nin</i> )
50	<i>ninnû</i>
60	<i>geš</i> (or <i>gešta</i> )

$$30 = ušu < *eš.u = 3 \times 10$$

$$40 = nišmin = niš.min = 20 \times 2 .$$

$$50 = ninnû < *nimnu = nimiru = ninin.u = 40 + 10.$$

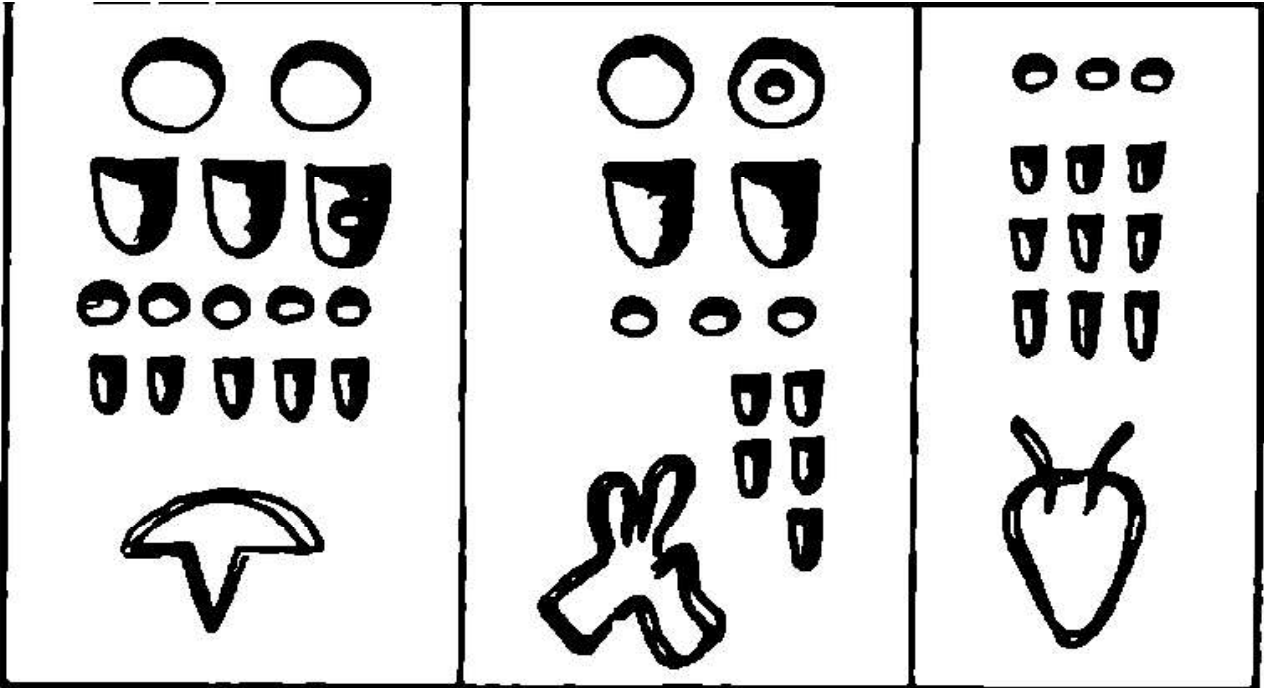
60	<i>geš</i>		360	<i>geš-àš</i>	(= 60 × 6)
120	<i>geš-min</i>	(= 60 × 2)	420	<i>geš-imin</i>	(= 60 × 7)
180	<i>geš-eš</i>	(= 60 × 3)	480	<i>geš-ussu</i>	(= 60 × 8)
240	<i>geš-limmu</i>	(= 60 × 4)	540	<i>geš-ilimmu</i>	(= 60 × 9)
300	<i>geš-iá</i>	(= 60 × 5)	600	<i>geš-u</i>	(= 60 × 10)

600	<i>geš-û</i>		2,400	<i>geš-u-limmu</i>	(= 600 × 4)
1,200	<i>geš-u-min</i>	(= 600 × 2)	3,000	<i>geš-u-iá</i>	(= 600 × 5)
1,800	<i>geš-u-eš</i>	(= 600 × 3)	3,600	<i>šâr</i>	(= 60 <sup>2</sup> )

<i>šâr</i>	3,600	(= 60 <sup>2</sup> )	<i>šâr-àš</i>	21,600	(= 3,600 × 6)
<i>šâr-min</i>	7,200	(= 3,600 × 2)	<i>šâr-imin</i>	25,200	(= 3,600 × 7)
<i>šâr-eš</i>	10,800	(= 3,600 × 3)	<i>šâr-ussu</i>	28,800	(= 3,600 × 8)
<i>šâr-limmu</i>	14,400	(= 3,600 × 4)	<i>šâr-ilimu</i>	32,400	(= 3,600 × 9)
<i>šâr-iá</i>	18,000	(= 3,600 × 5)	<i>šâr-u</i>	36,000	(= 3,600 × 10)

36,000	<i>šâr-u</i>	(= 60 <sup>2</sup> × 10)	144,000	<i>šâr-u-limmu</i>	(= 36,000 × 4)
72,000	<i>šâr-u-min</i>	(= 36,000 × 2)	180,000	<i>šâr-u-iá</i>	(= 36,000 × 5)
108,000	<i>šâr-u-eš</i>	(= 36,000 × 3)	216,000	<i>šârgal</i>	(= 60 <sup>3</sup> ) (literally: “big 3,600”)

**Il numero come concetto**





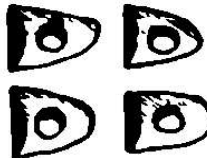
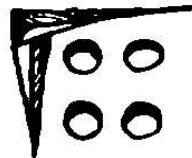


Quantità "astratte", prive di specificazione qualitativa





Oggetti strutturati, formati da parti autonome:



e liberamente combinabili,  
per sottrazione

 10 - 1 9	 20 - 2 18	 40 - 2 38	 60 - 3 57
 2,400		 40	
2,360		3,120	
		3,110	

o moltiplicazione

 72,000	 108,000	 144,000	 180,000
---	--	---	--

















































3.600 per 20

3.600 per 30

3.600 per 40

3.600 per 50

Evoluzione (tecnica) della scrittura:

	1	10	60	600	3,600	36,000	216,000
ARCHAIC NUMBERS (known from around 3200–3100 BCE)	VERTICAL ARRANGEMENT						
							
	HORIZONTAL ARRANGEMENT (probably from the third millennium BCE)						
				   			
CUNEIFORM NUMBERS (known since at least the 27th century BCE)							
							
							
					   	   	   

1	𐎶	11	𐎶𐎵	21	𐎶𐎵𐎶	31	𐎶𐎵𐎶𐎵	41	𐎶𐎵𐎶𐎵𐎶	51	𐎶𐎵𐎶𐎵𐎶𐎵
2	𐎶𐎶	12	𐎶𐎵𐎶𐎶	22	𐎶𐎵𐎶𐎶𐎶	32	𐎶𐎵𐎶𐎶𐎶𐎶	42	𐎶𐎵𐎶𐎶𐎶𐎶𐎶	52	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶
3	𐎶𐎶𐎶	13	𐎶𐎵𐎶𐎶𐎶	23	𐎶𐎵𐎶𐎶𐎶𐎶	33	𐎶𐎵𐎶𐎶𐎶𐎶𐎶	43	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶	53	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶
4	𐎶𐎶𐎶𐎶	14	𐎶𐎵𐎶𐎶𐎶𐎶	24	𐎶𐎵𐎶𐎶𐎶𐎶𐎶	34	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶	44	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶	54	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶
5	𐎶𐎶𐎶𐎶𐎶	15	𐎶𐎵𐎶𐎶𐎶𐎶𐎶	25	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶	35	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶	45	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	55	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶
6	𐎶𐎶𐎶𐎶𐎶𐎶	16	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶	26	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶	36	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	46	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	56	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶
7	𐎶𐎶𐎶𐎶𐎶𐎶𐎶	17	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶	27	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	37	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	47	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	57	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶
8	𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	18	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	28	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	38	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	48	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	58	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶
9	𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	19	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	29	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	39	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	49	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	59	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶
10	𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	20	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	30	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	40	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	50	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶	60	𐎶𐎵𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶𐎶

Evoluzione dopo l'avvento dell'impero accadico:

1. Inserimento di elementi decimali e moltiplicativi



ME  
100



LIM  
1,000

Notazione alternativa (sillabica) per il numero 60:




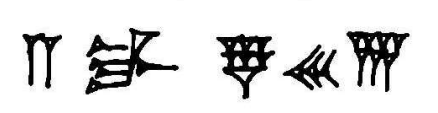
(šu-si)

Esempi:

 60 40 -----> 100	 2 ME -----> 200	 60 20 5 -----> 85	 1 ME 1 SHU-SHI 8 -----> 168
----------------------------	---------------------------	-----------------------------	---------------------------------------



2. Passaggio ad un sistema puramente decimale, moltiplicativo-additivo, parzialmente posizionale

Esempi:

 1 GAL 6 LI-IM 7 ME 40	 2 LI-IM . [7; 37]
$= 1 \times 10,000 + 6 \times 1,000 + 7 \times 100 + 40$ $= 16,740$	$= 2 \times 1,000 + (7 \times 100 + 37)$ $= 2,737$

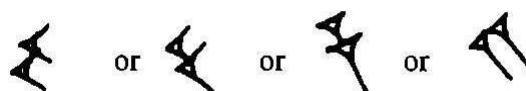
3. Affermazione di un sistema posizionale sessagesimale (scienziati assiro-babilonesi)

Esempi:


 [17 ; 46 ; 40] $(= 17 \times 60^2 + 46 \times 60 + 40)$ -----> 64,000	 [1 ; 57 ; 46 ; 40] $(= 1 \times 60^3 + 57 \times 60^2 + 46 \times 60 + 40)$ -----> 424,000
--	--

Successivamente:



- introduzione dello zero,



- prima come separatore intermedio,

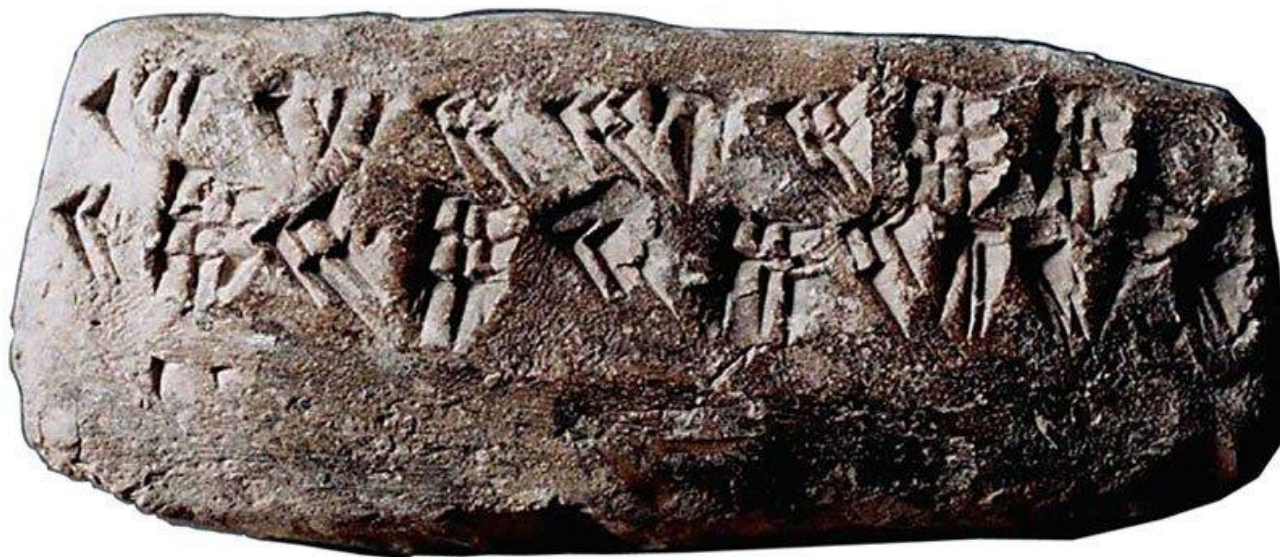
  
[20 ; 3 ; 13 ; 21 ; 33]  
↓  
Separation sign  
----->  
 $(= 20 \times 60^4 + 3 \times 60^3 + 13 \times 60^2 + 21 \times 60 + 33)$

- poi anche in posizione finale o iniziale (per numeri decimali):

 [1 ; 0] ----->	<div style="border: 1px solid black; padding: 5px; display: inline-block;">   [0 ; 0 ; 30] </div>	$= 0^\circ 0' 30''$	$\left(= 0 + \frac{0}{60} + \frac{30}{60^2}\right)$
--	--	---------------------	---



Un numero grandissimo



MS 2351

Extremely large 15-place sexagesimal number. Babylonia, 19th c. BC

13 22 50 54 59 09 29 58 26 43 17 31 51 06 40

Ventesima potenza di 20