

THE CRADLE OF WRITTEN NUMBERS

THE MESOPOTAMIA

RECKONING



This multiplication table (times seven) was found at Nippur, in the ruins of a school for scribes and probably dates from the second millennium B.C.E.

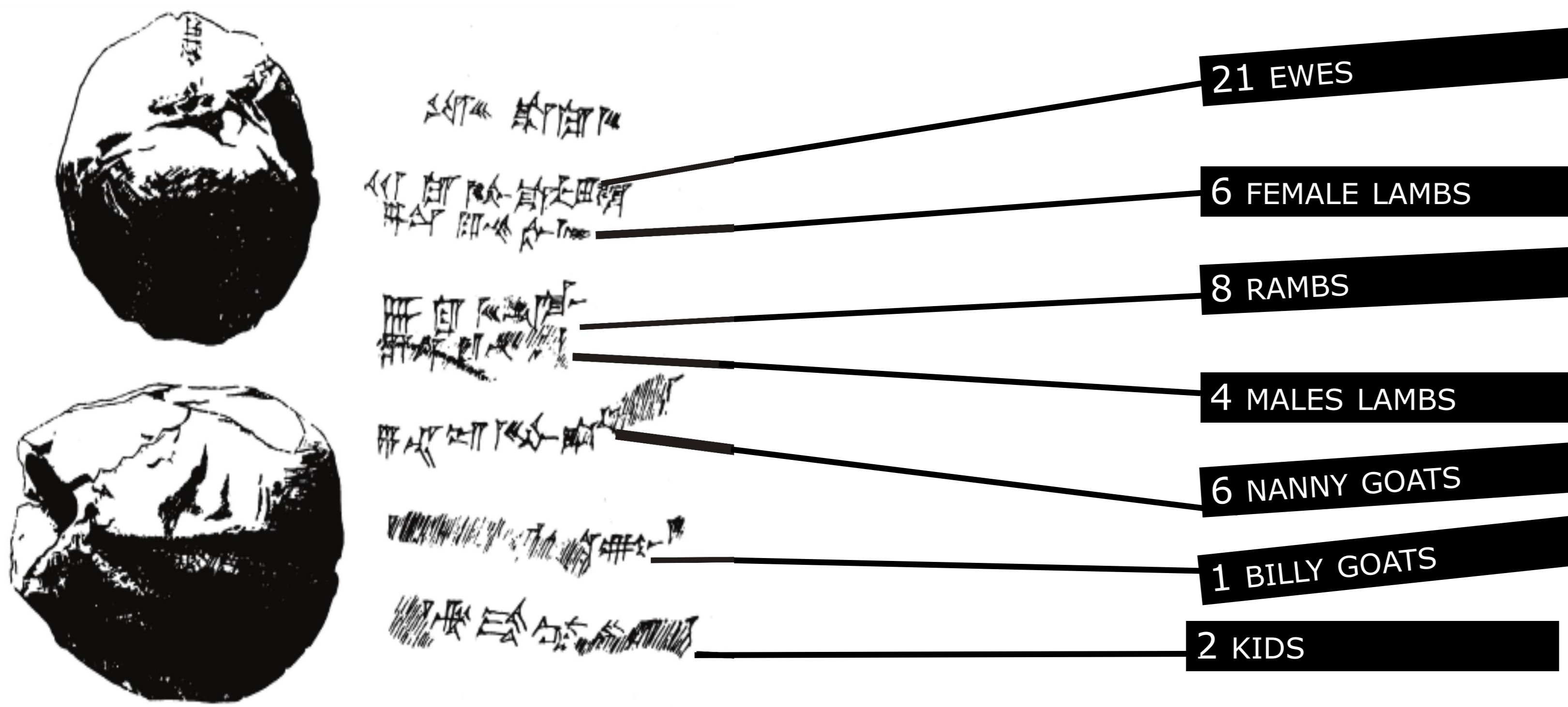
The numbers 2-14 can be read in the central column and their product by 7 in the furthest column to the right, (the first of this list, 2x7, is unreadable because it is in the damaged part).



The numeration used is base sixty with an intermediary base ten. Two symbols suffice to write fifty nine digits (zero is absent).

unités :	1	2	3	4	5	6	7	8	9
dizaines :	10	20	30	40	50				

BULLAE (TOKEN CONTAINERS)



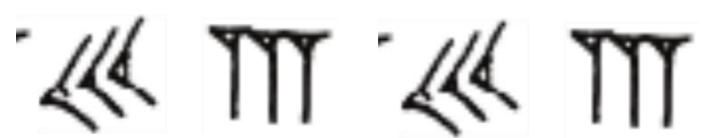
This ovoidal object, which contained 48 small stones, puzzled the archaeologists who discovered it near Kirkuk in 1928.

The mystery was cleared up, thanks to a native in charge of supplies for the mission. On returning from the market, he was unable to say how many hens he had bought and released into the henhouse, but he took a handful of pebbles from his pocket ... thus perpetuating a practice several thousand years old.

The use of these bullae predates that of clay tablets. The example opposite corresponds to the delivery of a herd of 48 animals.

SOME WRITING TO INTERPRET

2013 = 33 x 60 + 33 is:



but this writing can also be read as 33 + 33/60 or as 33/60 + 33/602 depending on the context

More generally, any fraction whose denominator is a product of powers of 2, 3 or 5, can be written with a finite number of vertical and corner wedges

AT THE BEGINNING OF OUR MEASUREMENT OF TIME

Our measurement of time (or of angles) in hours (degrees), minutes and seconds is of Mesopotamian origin.

Just as half an hour is equal to 30 minutes or a quarter of an hour is equal to 15 minutes, pairs of numbers whose product is a power of 60 are called inverse pairs e.g. (2; 30) (3; 20), (4; 15) (5; 12), (6; 10). For example, the inverse associated with 8 is the number 30x15 = 450 or 7.30 in sexagesimal notation.

A REMARKABLE APPROXIMATION TO $\sqrt{2}$



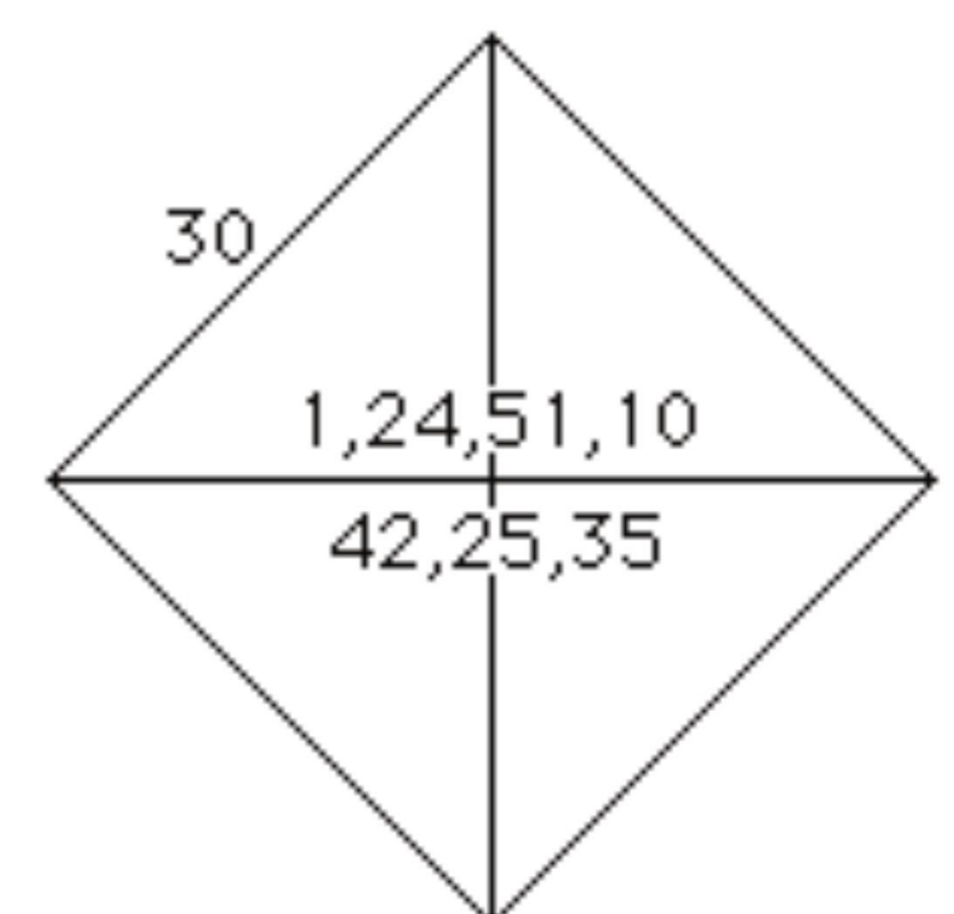
The tablet YBC 7289, discovered in the ruins of Babylon in 1912 and in the collection of Yale University, measures 8 cm in diameter. Its date is estimated to be between -1900 and -1600.

The number 30 can be read on the side of the square and on the diagonal. Below it are the numbers (written in sexagesimal notation) 1.24.51.10 and 42.25.35.

The number 1.24.51.10 put in the form $1 + 24/60 + 51/60^2 + 10/60^3 = 1.4142129$ is an approximation of $\sqrt{2}$ to the order of 6×10^{-7} ! $\sqrt{2} = 1.4142135 \dots$

This tablet is undoubtedly the solution of an exercise, given in a school for scribes, for finding the diagonal of a square when the side is known.

That the scholars of the time knew of an approximation of $\sqrt{2}$ with such precision, compels our admiration. No document has come down to us concerning the method of obtaining such a result.



THE YALE TABLET