

(Pre-) History of Mathematics

2022-01-11

①

What is mathematics?

"Necessary facts about abstract entities." (Could include a lot of philosophy...)

- numbers, counting, arithmetic, ...
- points (locations), lines, planes, curves, ...
- logic, graphs, block designs, surfaces, functions, ...

We'll mostly be seeing these.

What is history?

Roughly, what happened that got written. Where what is written is incomplete or dubious (author bias)

we often have to compare other accounts and consider other evidence, such as physical remains (e.g. archaeology) and oral accounts. This is especially true when we go back a long way.

One fundamental problem is that history usually requires a writing system. . . . (2)

The earliest ones we have evidence for are those from ancient Mesopotamia (mostly modern Iraq) where writing was developed by 3400 B.C. and ancient Egypt, where it was developed by 3200 B.C. (probably independently, but who knows. . .).

In Mesopotamia, writing seems to have evolved from making clay tokens to keep track of objects such as jars of grain. These ^{tokens} were stored in clay jars of their own, and then people started making marks on these jars to indicate their contents, and these marks evolved into writing on clay tablets.

We'll be looking at the number systems used
in ancient & classical Mesopotamia, Egypt,
& Greece, (3)

We'll look at Egypt first.

Zeroth, we'll take a peek at prehistoric mathematics.

We have very little hard evidence:

- what appear to be notched bones used as tally sticks
 - could be art, or someone being bored
- cave art, mostly pictures but there are occasional markings that might represent some attempt to leave a count

Attempts have been made to fill in the gaps by considering: (a) animal behaviour & capabilities

eg corvids (crows & ravens) seem to be able to distinguish between different numbers of objects

(b) child psychology: How do kids learn to count & so on? ④

(c) pre-literate societies that survived to be recorded by literate societies.

So we'll really start with the first literate, record-keeping civilizations we know of, and look at the surviving records, and back these up with other evidence as its available.

next: ancient Egypt.