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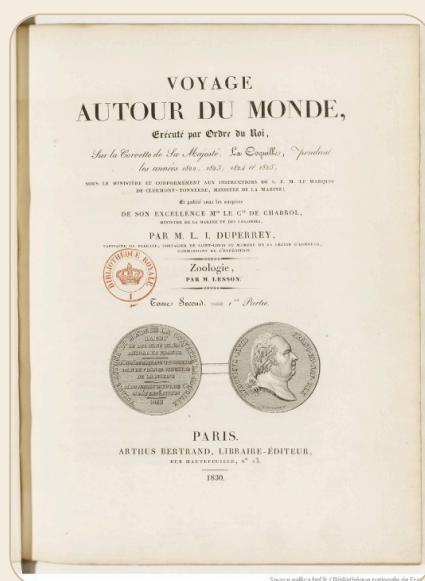
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A Māori Mathematical Mystery: Counting by Elevens

A report that Māori counted by elevens became a historical mathematical mystery, revealing the risks of misunderstanding another culture’s counting practices.

Mansur Gilmullin · 25.04.2026 · EN

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Louis-Isidore Duperrey’s reports on the voyage of the corvette La Coquille. This expedition’s materials are associated with one of the strangest stories about Māori numeration · [Source](#)

Some episodes in the history of mathematics resemble investigations more than rigorous theorems. A piece of testimony seems astonishing. Books and dictionaries repeat it. Then it emerges that everything may have begun with a misunderstanding, a joke or a misinterpreted method of counting.

One such episode concerns the Māori, the indigenous Polynesian people of Aotearoa, New Zealand. In the XIX century, an unusual idea appeared in European literature: supposedly, Māori had once counted by elevens rather than tens.

At first this sounds almost unbelievable. Decimal counting seems most familiar: ten fingers, ten units in a ten, then hundreds and thousands. Yet the history of science shows that what is “natural” to one observer is not always the only possibility.



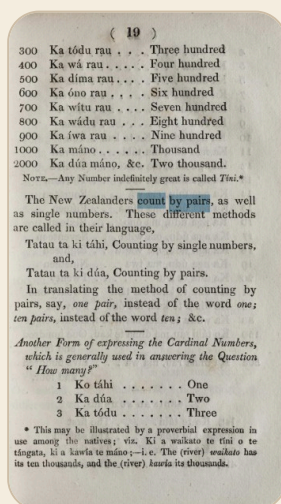
René-Primevère Lesson (1794–1849), French physician, naturalist and participant in the La Coquille expedition. His note and later retellings are associated with the spread of the idea of “counting by elevens” · [Source](#)

In 1822–1825, the French corvette La Coquille sailed around the world under Louis-Isidore Duperrey. In April 1824, the expedition was in New Zealand’s Bay of Islands. Its members included the physician and naturalist René-Primevère Lesson and the young naval officer Jules Poret de Blosseville.

Their names later became associated with an unusual report: that Māori arithmetic was based on the number 11. Retellings included numeral forms supposedly corresponding to 11, 121 and 1331 — the powers of eleven.

Some European authors found this so strange that the story took on a life of its own. It passed from one work to another, entering surveys and discussions of numeral systems and appearing to offer a rare example of a base-eleven system.

But this is where the real historical mathematical intrigue begins.

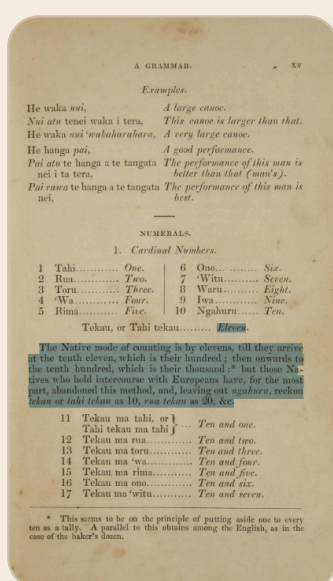


A page from A Grammar and Vocabulary of the Language of New Zealand by Thomas Kendall and Samuel Lee, 1820. This early source describes Māori numerals as decimal, while also mentioning counting in pairs · [Source](#)

Early Māori grammars and dictionaries do not confirm a base-eleven system. Thomas Kendall and Samuel Lee's grammar of 1820 already describes numerals in ordinary decimal terms: ten, twenty, a hundred, a thousand. It also expressly notes, however, that Māori could count pairs as well as individual objects.

This detail matters. When someone counts pairs, ten counting units may mean twenty physical objects. An outside observer, particularly one with little understanding of the language and context, can easily mistake this for an “unusual” system, even though its internal logic is perfectly coherent.

William Williams's dictionary of 1844 contains an even more revealing passage. It explicitly mentions “counting by elevens”, but offers an explanation alongside it: perhaps one object in every ten was set aside as a marker. Thus, already in the XIX century, a more careful author saw that this need not mean base 11; it might be a particular way of grouping objects and recording a count.



William Williams's dictionary of 1844. It retains the unusual phrase “counting by elevens”, but cautiously explains it in terms of setting aside an object as a marker · [Source](#)

What might have happened in practice?

The contemporary researcher Karenleigh Overmann has proposed treating this case as evidence of a complex oral and object-based counting technique rather than proof of “base 11”. One possible mechanism worked as follows: while counting objects, one in every ten was set aside to mark a completed group. These markers could then themselves be counted, forming the next level of accounting.

This resembles a calculating device, but without a board, beads or written notation. Objects temporarily become place values. Some lie in the main group, while others are set aside to represent completed tens or larger groups. Once counting was finished, this temporary structure could be dismantled.

Overmann therefore calls such a system an “ephemeral abacus”: a temporary counting device that exists only while the count is in progress.

Tally counting creates temporary piles of objects representing different exponential weights—a pile of tens, a pile of *hundreds* and so on. An object assumes a value ten times greater than its counterparts by being sorted into a different pile; this creates a literal place value, exponential weighting acquired from being physically located in a different pile. The piles effectively comprise a representational device, an *epiphenomenal abacus*: an abacus because it instantiates exponential grouping and facilitates the exchange of value between groups; epiphenomenal because the device persists only while counting is performed. While such devices are ad hoc and short-lived, they also suggest a mechanism for realising two-dimensional structure in numbers because exponential grouping through sorting is added to the ordinal accumulation of a counting sequence. On this account, numerical structure emerges from exponential distinctions created physically and understood contextually, with linguistic labels emerging to reinforce and perpetuate the exponential distinctions and to help remember and recall the information in the absence of a persisting material device.

70 The Curious Idea That Māori Once Counted by Elevens



Figure 2. Pair-counting with every tenth pair set aside as a counter. In the first round, 3,987 items counted in pairs (1,993½ pairs) by tens create 199 scores, of which every tenth pair (199 pairs or 398 items) is retained as a counter and 3,589 items (3,582, or nine of every ten pairs, plus the remainder of seven) are added to the heap of items counted. In the second round, 398 items counted in pairs (199 pairs) by tens create 19 ten-scores (numerically valued at 20 each), of which every tenth pair (19 pairs or 38 items) is retained as a counter and 360 items (342, or nine of every ten items, plus the remainder of 18) are added to the heap. In the third round, 38 items are counted in pairs (19 pairs) by tens to create one 100-score (numerically valued at 200), with 36 items (18, or nine of every ten items, plus the remainder of 18) added to the heap. In the fourth and final round, two items counted in pairs (one pair) represents one 1,000-score (numerically valued at 2,000). Note: The term *heap* is taken from Hale's (1846: 247) description of Polynesian counting: "Taking one [item] in each hand, the natives, as he throws [the items] into the storehouse, or on to the heap, counts one; for two pairs, he says *tau*; for ten pairs simply *ten*, and so on".

The author's diagram based on Karenleigh Overmann's reconstruction (2020): nine objects remain in the main group, and every tenth object is set aside to mark a completed group of ten. This helps explain why a European observer might mistakenly perceive "counting by elevens" · [Source](#)

It is especially important here to avoid the trap of familiar assumptions. Mathematics does not always begin with written formulas. Sometimes it lives in hand movements, the arrangement of objects, practical arithmetic, words, and rules governing exchange, farming, building and navigation at sea.

An outsider observing this counting may record only what they understood through their own cultural habits. What they understood is not always what actually happened.

In the Māori case, another feature was involved: counting in pairs. Such practices were well known in Polynesian languages. People might count individual objects, pairs, bundles or groups. The same collection of physical objects could therefore receive different numerical expressions depending on what was counted: single objects, pairs or groups.

Modern Māori dictionaries give the ordinary form for 11: *tekau mā tahi*, "eleven". *Tekau* means ten; *ngahuru* can also mean "ten". This again shows that the claim "Māori counted in base 11" fails scrutiny even at the level of basic numerals.

The story's value, however, lies beyond catching earlier authors in an error. Something else is much more interesting.

Here we see how historians of mathematics work with fragile evidence. There is a traveller's report, a dictionary, a grammar, oral practices and linguistic forms. All must be compared. Only then does an odd curiosity become a serious discussion of how different cultures organized counting.

Māori mathematics is no less interesting because "counting by elevens" proved doubtful. On the contrary, behind the apparent strangeness lies something more subtle: the ability to count in large groups without writing, use objects as temporary place values, and move from counting individual items to pairs and groups.

Sometimes the history of mathematics teaches caution rather than new formulas. Another culture's mathematics cannot be understood solely through a familiar school table. It may have its own units, grouping methods, oral algorithms and "calculating machines" unlike ours.

Numbers are more than digits on paper. They are also a way to come to terms with the world: count a harvest, divide possessions, remember a quantity and pass knowledge to another person. The story of "elevens" reminds us that sometimes the most interesting mathematics begins where a researcher first thinks: "That cannot be!"



Mathematics with Mansur-abyy