Napier's Bones

CCSS 5.OA.3

MATERIALS:

-Napier's Bones

Lesson Prep: Cut a set of Napier's Bones into vertical strips for each pair of students.

John Napier was a wealthy Scottish land owner who thought about math as a hobby. He designed what has become known as Napier's Bones. Napier's Bones are logarithms carved into ivory rods.

Examine the paper **Napier's Bones** (prepared as described in the Lesson Prep section above) as a class. Each strip contains multiples of the top number. For example, bone "7" has the following multiples: 14, 21, 28, 35, 42, 49, 56 and 63

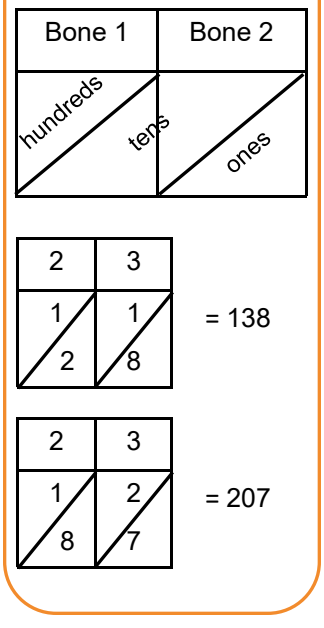
If you put two or more bones together , the bones will show all the multiples of that top number. For example, if you put bones "2" and "3" together, the corresponding multiples are shown below. These are: 46, 69, 92, 115, 138, 161, 184 and 207 (note that numbers of the same color on the same diagonal are added together).

Similarly, if you lay bones "2", "3", and "5" next to each other, the corresponding multiples are 470, 705, 940, 1,175, 1,410, 1,645, 1,880 and 2,105

Pass out a set of Napier's Bones to each pair of students. Have them first look at a single bone to note how the multiples of the number on top are written below.

Now have them practice putting two or more bones next to each other. Ask students if they can determine the multiples of the top number.

Place Value Examples



ZENO math powered

Napier’s Bones

1	2	3	4	5	6	7	8	9	0
0 / 1	0 / 2	0 / 3	0 / 4	0 / 5	0 / 6	0 / 7	0 / 8	0 / 9	0 / 0
0 / 2	0 / 4	0 / 6	0 / 8	1 / 0	1 / 2	1 / 4	1 / 6	1 / 8	0 / 0
0 / 3	0 / 6	0 / 9	1 / 2	1 / 5	1 / 8	2 / 1	2 / 4	2 / 7	0 / 0
0 / 4	0 / 8	1 / 2	1 / 6	2 / 0	2 / 4	2 / 8	3 / 2	3 / 6	0 / 0
0 / 5	1 / 0	1 / 5	2 / 0	2 / 5	3 / 0	3 / 5	4 / 0	4 / 5	0 / 0
0 / 6	1 / 2	1 / 8	2 / 4	3 / 0	3 / 6	4 / 2	4 / 8	5 / 4	0 / 0
0 / 7	1 / 4	2 / 1	2 / 8	3 / 5	4 / 2	4 / 9	5 / 6	6 / 3	0 / 0
0 / 8	1 / 6	2 / 4	3 / 2	4 / 0	4 / 8	5 / 6	6 / 4	7 / 2	0 / 0
0 / 9	1 / 8	2 / 7	3 / 6	4 / 5	5 / 4	6 / 3	7 / 2	8 / 1	0 / 0
/	/	/	/	/	/	/	/	/	/