

Question

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Hi All

I have a question.

Imagine a bundle of stickes |||..... , the first stick is at position zero , the second at position 1, the third at position 2 , ad infanitum. This bundle can be easily bijected to Peano's natural numbers beginning from zero $N=\{0,1,2,3,\dots\}$, so it has cardinality equal to Aleph-0.

Now image a two dimensional stick bundle as below

```

..
..
..
||||.....
||||.....
||||.....

```

This also can be bijected to $N=\{0,1,2,3,\dots\}$, this can be made easily in a zigzag manner as below:

```

..
..
16 ..
15 ...
7 14 ..
68 13 ..
259 12 ..
13410 11.....

```

So even this two dimensional bundle of stickes has cardinality equal to Aleph-0 since it can be bijected to $N= \{0,1,2,3,\dots\}$

In a similar manner a three dimentional bundle can be imagined to be bijected to N and thus has also cardinality equal to Aleph-0.

Question

In reality any n -dimensional bundle of sticks can be easily bijected to \mathbb{N} and thus has \aleph_0 cardinality.

My question is what if we had an \aleph_0 dimensional bundle of sticks, then can that be bijected to \mathbb{N} , and how can that be imagined.

Zuhair

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