

How to count rational numbers

Source: <http://sci.tech--archive.net/Archive/sci.math/2007-10/msg06028.html>

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 - *Date:* Wed, 31 Oct 2007 06:27:51 -0700
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I already discredited myself by my miscarried attempt to count sums of prime numbers. Nevertheless, I try it again.

In the rational matrix R , $r(i,j) = j/i$

- 1) $n(n - 1)/2$ elements are lesser than 1 in the matrix T ,
- 2) n elements are equal to 1, and
- 3) $n(n - 1)/2$ elements are greater than 1.

The value $1/2$ repeats in every even row, thus this fraction repeats $n/2$ times, supposing that n is even. We must subtract $[(n/2) - 1]$ from the value of T to eliminated these repeated values $1/2$. We will call these orrective elements as $c(i)$.

The values $1/3$ and $2/3$ repeat in every third row, thus these 2 rational numbers repeat $2n/3$ times in the matrix T . We must subtract $[(2n/3) - 2]$ from the value of T to eliminated repeated values $1/3$ and $2/3$, again supposing that n is divisible by 3.

$1/4, 2/4, 3/4$ repeat in every 4. row, but $2/4$ was already counted as $1/2$. This leaves 2 uncounted elements in every 4. row. We must subtract $[(n/2) - 2]$ from the value of T to eliminated repeated values $1/4$ and $3/4$.

The prime 5 gives repeatings as $4n/5$, and the term $[(4n/5) - 4]$, generally $[(\{p - 1\}n/p) - p + 1]$.

From $j/6, 3/6$ corresponds to $1/3$, and $2/6$ and $4/6$ to $1/3$ and $2/3$,

respectively. This leaves fractions $1/6$ and $5/6$ to be counted.

Carefully continuing, and finding ways to eliminate possible rounding errors, it were possible to find the counting function for any n .

It can be conjectured, that for none n

$T - \sum c(i)$ is not equal to n .

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