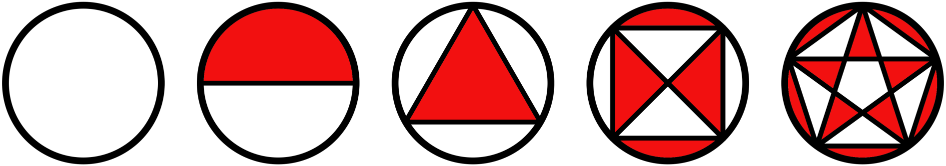
What is...the strong law of small numbers?

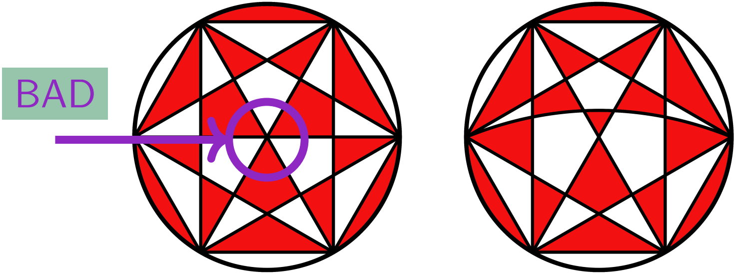
Or: There are not enough small numbers

A trap and my pattern fails for $n = 6$ a.k.a. Moser's circle problem

What is the maximal number of faces one can get by dividing a circle by chords with no > 2 internally concurrent?



1 face | 2 faces | 4 faces | 8 faces | 16 faces



32 faces | 31 faces

Facts only facts!

The numbers $31, 331, 3331, 33331, 333331, 3333331, 33333331, \ldots$ are all (?) prime

$$(x+y)^3 = x^3 + y^3 + 3xy(x^2+xy+y^2)^0$$
$$(x+y)^5 = x^5 + y^5 + 5xy(x^2+xy+y^2)^1$$
$$(x+y)^7 = x^7 + y^7 + 7xy(x^2+xy+y^2)^2$$

... (?)

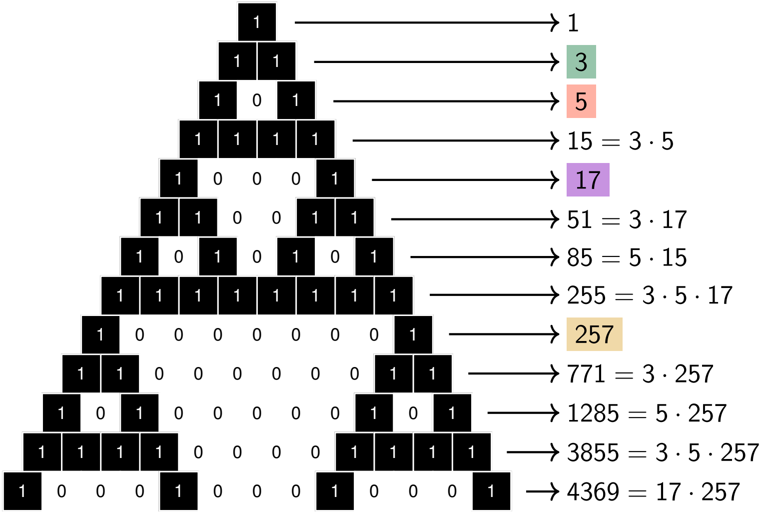
$a_0 = 1, a_{n+1} = (1 + a_0^2 + \ldots + a_n^2)/(n+1)$ gives only (?) intergers:

n	0	1	2	3	4	5	6	7	8	9
a_n	1	2	3	5	10	28	154	3520	1551880	267593772160

$a_n = (\partial_x^n x^x)(1)$ is always (?) divisible by n:

n	1	2	3	4	5	6	7	8	9	10	11	12
a_n/n	1	1	1	2	2	9	-6	118	-568	4716	-38160	358126

Another one: Pascal and constructible polygons



Pascal's triangle mod 2 encodes (?) the number of regular polygons with an odd number of sides constructible with ruler and compass

Enter, the theorem/philosophy!

There aren't enough small numbers to meet the many demands made of them

Richard K. Guy

In other words: You can't tell by looking

This has wide application, outside mathematics as well as within

The Strong Law of Small Numbers

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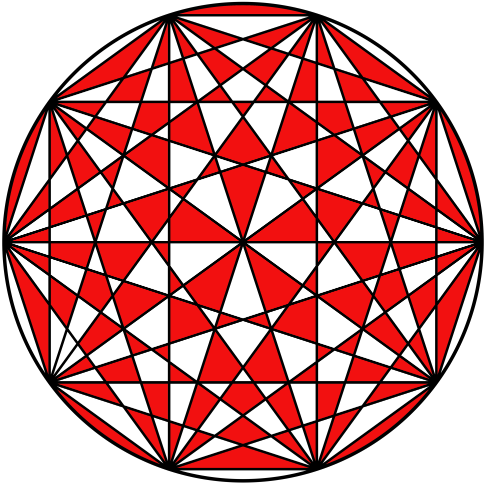
The 10th Moser circle puzzles me once again



230 faces

Only 230 faces. Claim. If you resolve > 2 intersections, you get $256 = 2^9$ faces!

Thank you for your attention!

I hope that was of some help.