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Bob Hinman
letter to NJAS

5 pages

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Aug 22
1980

Dear Neil

The Second supplement - "GAug Supp1" is in order. It doesn't include the 20 or so entries that had no numbers of the actual sequence in them - they are at the end of Augsupp. Here's a list of page #'s from Math. of Comp.

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271, 288-9, 294, 302-13, 333, 497-7, 576-7, 603, 618, 629-33, 647, 656, 834, 845, 853, 856-7, 1135-6, 1140, 1143, 1148-9

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In the meantime, I thought of a few sequences.
1, 2, 4, 5, 8, 10, 16, 20, 25, 32, 40, 50, 64, 80, 100, 125, 128, 160, 200, 250, 256, 320, 400, 500, 512, 625, 640, 800, 1000, 1024, 1250, 1280, 1600, 2000, 2048, 2500, 2560, 3125, 3200, 4000, 4096, 5000, are the numbers whose reciprocals are terminating decimals

There is a pattern to the sequence of numbers which are the atomic numbers of the noble gases. Theoretically, you could extend this indefinitly
1, 2, 10, 18, 36, 54, 86, 118, 168, 218, 290, 362, 460, 558, 686, 814, 976, 1148, 1348, 1548, 1790, 2032, 2320, 2608, 2946, 3284, 3676, 4068, 4518, 4968, 5480, 5992, 6570, 7148, 7796, 8444
is what you get. The differences between terms, goes 8, 8, 18, 18, 32, 32, 50, 50, 72, 72, etc. the differences of the differences increasing by 4. It all has to do with orbitals.

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"Pascals tetrahedron" has the formula

$$\frac{n!}{(n-r)!(r-x)!x!}$$

for the $(x+1)$th term in the $(r+1)$th row of the $(n+1)$th "layer" (or triangle).

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the first few layers are

1

1
1 1

1
2 2
1 2 1

1
3 3
3 6 3
1 3 3 1

1
4 4
6 12 6
4 12 12 4
1 4 6 4 1

1
5 5
10 20 10
10 30 30 10
5 20 30 20 5
1 5 10 10 5 1

1
6 6
15 30 15
20 60 60 20
15 60 90 60 15
6 30 60 60 30 6
1 6 15 20 15 6 1

$$\frac{x_1!}{(x_1-x_2)!(x_2-x_3)!\cdots(x_{n-1}-x_n)!x_n!}$$

The terms in the center go 1, 6, 90, 1680, ...

$$\frac{(3a)!}{(a!)^3}$$

In the formula above, n, r, x are first 3, 2, 1, then 6, 4, 2, then 9, 6, 3, etc.

If somebody had nothing else to do, he could generalize to Pascal's nth-dimensional object

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~~The odd abundant numbers might be nice, but I couldn't find a list of them. the first is 945~~

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The numbers
1, 2, 4, 6, 12, 24, 36, 48, 60, 120, 180, 336, 360, 720, 840, 1260, 1680, 2520, 5040, 7560
set successive records for most ~~factors~~ divisors

Observe the powers of 5

5	ones column repeats	5
25	tens " "	2
125	hundreds " "	16
625	thousands " "	3580
3125		
15625	etc.	
78125		
390625	you get a sequence	

No

1, 5, 2, 16, 3580, 17956240, 3978175584236200,

19840377976181556439582242163600

Each ~~the~~ term is twice as long as the one before. Why? I don't know f91

One last interesting sequence might be the numbers that aren't in the book.
the only terms less than 600 are 417, 517, 537,
couldn't find any more (in the right order)

There's a pile of my stuff next to the garbage. You can throw any of it out, as far as I'm concerned.

I haven't been paid for my last 5 weeks.
here are hours

Week #	M	T	W	Th	F	
1	6½	6½	6½	6	6	31½
2	6	4½	none	none	4½	15
3	6	5	4½	5	none	20½
4	5	7	6½	6	6	30½
5	6½	5	5½	6	7	30

total 127½

My phone number at home is 464-9203, if you have questions.
My MIT extention is 6491 (dormline). Call in the morning. I'm often out during afternoons and evenings.
It's been very enjoyable working for you. If you or anybody you know needs somebody for January or next summer, I'll still be living here in New Providence.

Sincerely,
Bob Hemman