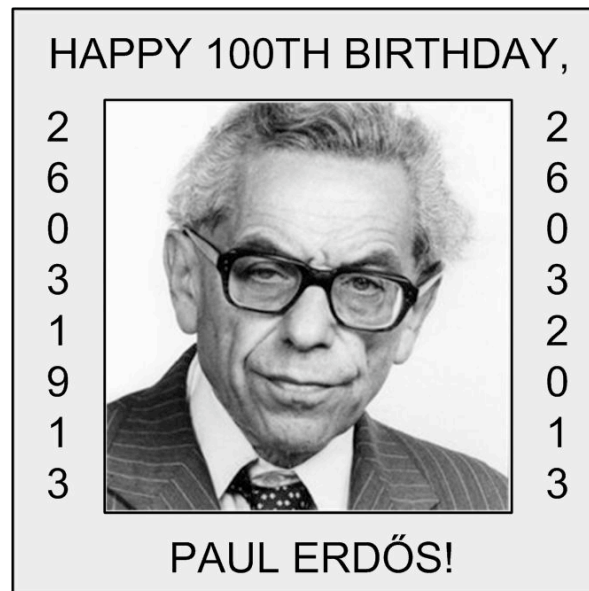


Happy 100th Birthday, Paul Erdős!

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Paul Erdős (26 March 1913-20 September 1996, died at 83) was an influential Hungarian mathematician who spent a significant portion of his later life living out of a suitcase and writing papers with those of his colleagues willing to provide him room and board [1, 2]. He worked on problems in combinatorics, graph theory, number theory, classical analysis, approximation theory, set theory, and probability theory. He published more papers than any other mathematician in history, working with hundreds of collaborators. He wrote over 1,500 mathematical articles in his lifetime, mostly with co-authors. Erdős is also known for his “legendarily eccentric” personality.

Erdős strongly believed in and practiced mathematics as a social activity, having over 500 collaborators during his life. Due to his prolific output, his friends created the *Erdős* number as a humorous tribute to his outstanding work and productivity [2]. Erdős number describes the “collaborative distance” between a person and mathematician Paul Erdős, as a measure by authorship of mathematical papers.

This Tuesday, 26 March 2013, marks Erdős’s centennial birthday. As I was looking at numbers related to Erdős’s birthday, I noticed some interesting numerical coincidences and connections. I decided to report my findings in this article, as a centennial brainteaser birthday gift for Erdős.

The following are my numerical findings related to Erdős’s birthday:

1. Erdős’s birth date, 26 March, can be expressed in day-month date format as 26-3, or simply 263. Coincidentally, the 263rd day of 2013 and any other non-leap year is 20th of September, the day Erdős died in 1996.
2. Erdős’s 100th full birthday in day-month-year date format can be written as 26-3-2013 or simply, 2632013. This number can be expressed in terms of its prime factors as follows:

$$2632013 = 19 \times 83 \times \underbrace{1669}_{263\text{rd prime}} = \underbrace{1577}_{19 \times 83} \times \underbrace{1669}_{263\text{rd prime}}$$

Notice that Erdős's 100th birthday expressed as 2632013 is divisible by the 263rd prime number 1669, where 263 represent Erdős's birth date, 26 March! Also, if its prime factor 1669 is split in the middle as 16 and 69, these two numbers add up to 85, where the 85th day of 2013 (and any other non-leap year) is amazingly 26 March! In addition, prime 83 represents Erdős's death age and 19 is equal to half of the reverse of 83. (Also, as an aside, if number 1577 is split in the middle as 15 and 77, 15 plus 77 equals the difference of 1669 and 1577.)

3. Erdős's 100th full birthday can also be written as 26-03-2013, or simply, 26032013. The prime factors of this date number are given as follows:

$$26032013 = 157 \times 7 \times \underbrace{23687}_{2636\text{th prime}}$$

First, the prime factors 157 and 7 put side-by-side yield number 1577, one of the divisors of 2632013. Second, 23687 correspond to the 2636th prime number [3], where the leftmost three digits of 2636 is again 263, representing 26 March! Wow! Third, the rightmost digit 6 of 2636 corresponds to the sum of the digits of 2013. Fourth, 2636 differ from 2603 (representing 26 March) by 33, where 33 equals 20 plus 13, where 20 and 13 constitute the left- and right-halves of 2013. Fifth, the digits of 23687 add up to 26, the day number of Erdős's birthday. Sixth, if 2636 is split in the middle as 26 and 36, the sum of these two numbers yield 62, where the reverse of 62 is 26, again, the day number of Erdős's birthday.

4. Erdős's birth year 1913 is the 293rd prime number, where 293 is the 62nd prime number, where again the reverse of 62 is 26, the day number of Erdős's birthday.
5. Erdős's 100th full birthday in day-month-year date format is 3-26-2013, or simply, 3262013. Interestingly enough, the prime factors of the reverse of 3262013 are given as follows:

$$\overleftarrow{3262013} = 29 \times 83 \times \underbrace{1289}_{209\text{th prime}}$$

Here, numbers 83 and 209 can be interpreted as Erdős's death age and death date (20 September).

6. 1289 is also one of the prime factors of the reverse of Erdős's full birthday expressed in day-month-year date format as 26031913 since

$$\overleftarrow{26031913} = 2 \times \underbrace{1289}_{209\text{th prime}} \times 12379$$

Thanks for transforming mathematics into a universal social activity through your modesty and humbleness Paul Erdős, and have a happy 100th birthday!

[1] http://en.wikipedia.org/wiki/Paul_Erd%C5%91s

[2] http://en.wikipedia.org/wiki/Erd%C5%91s_number

[3] <http://www.bigprimes.net/>